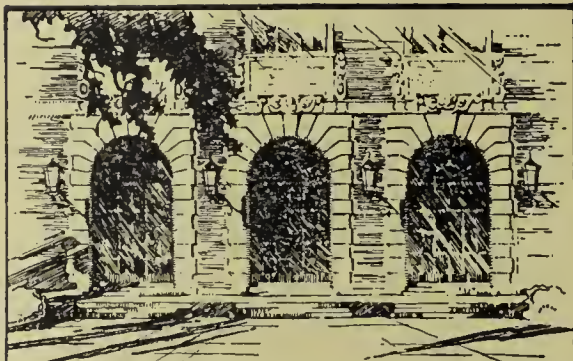


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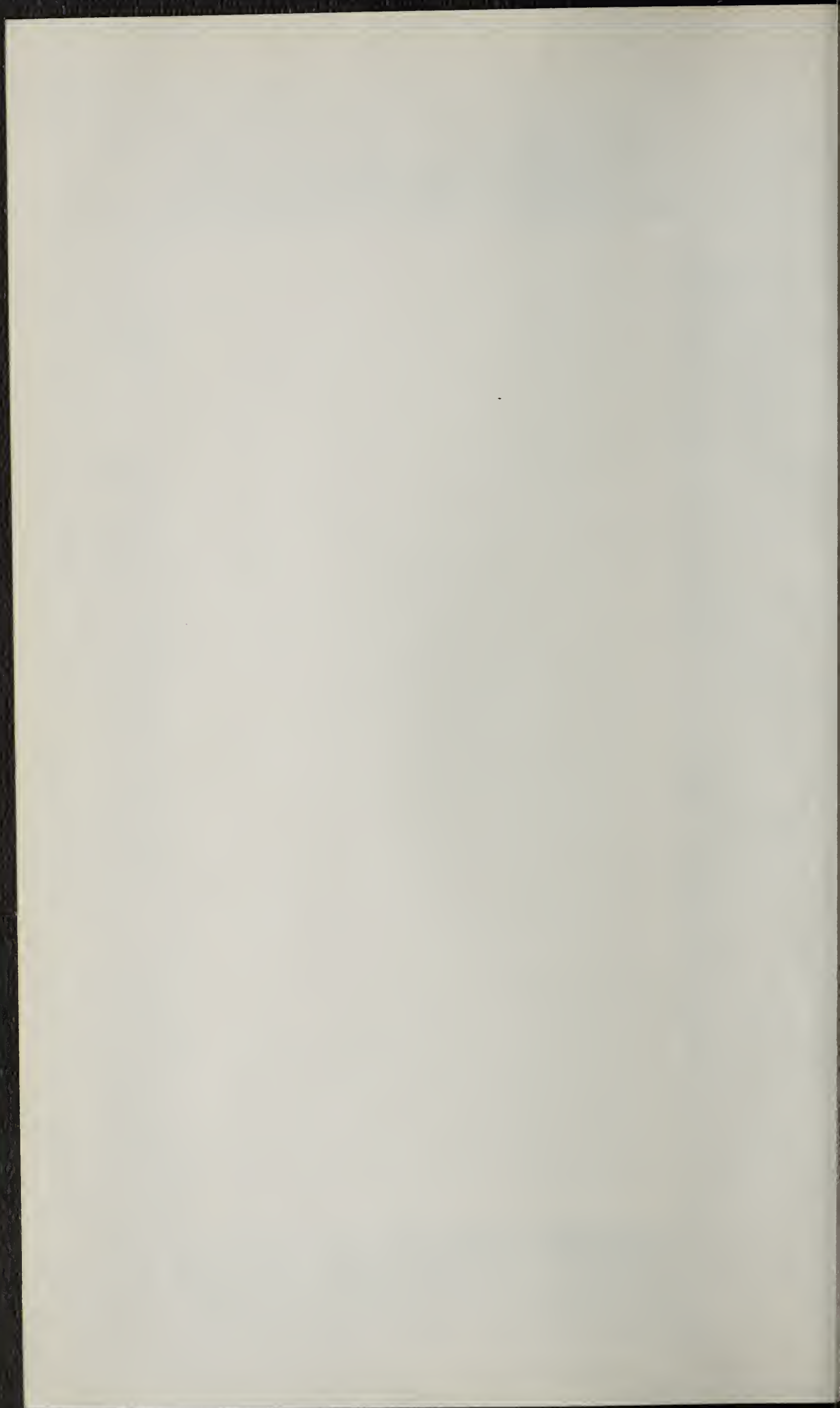
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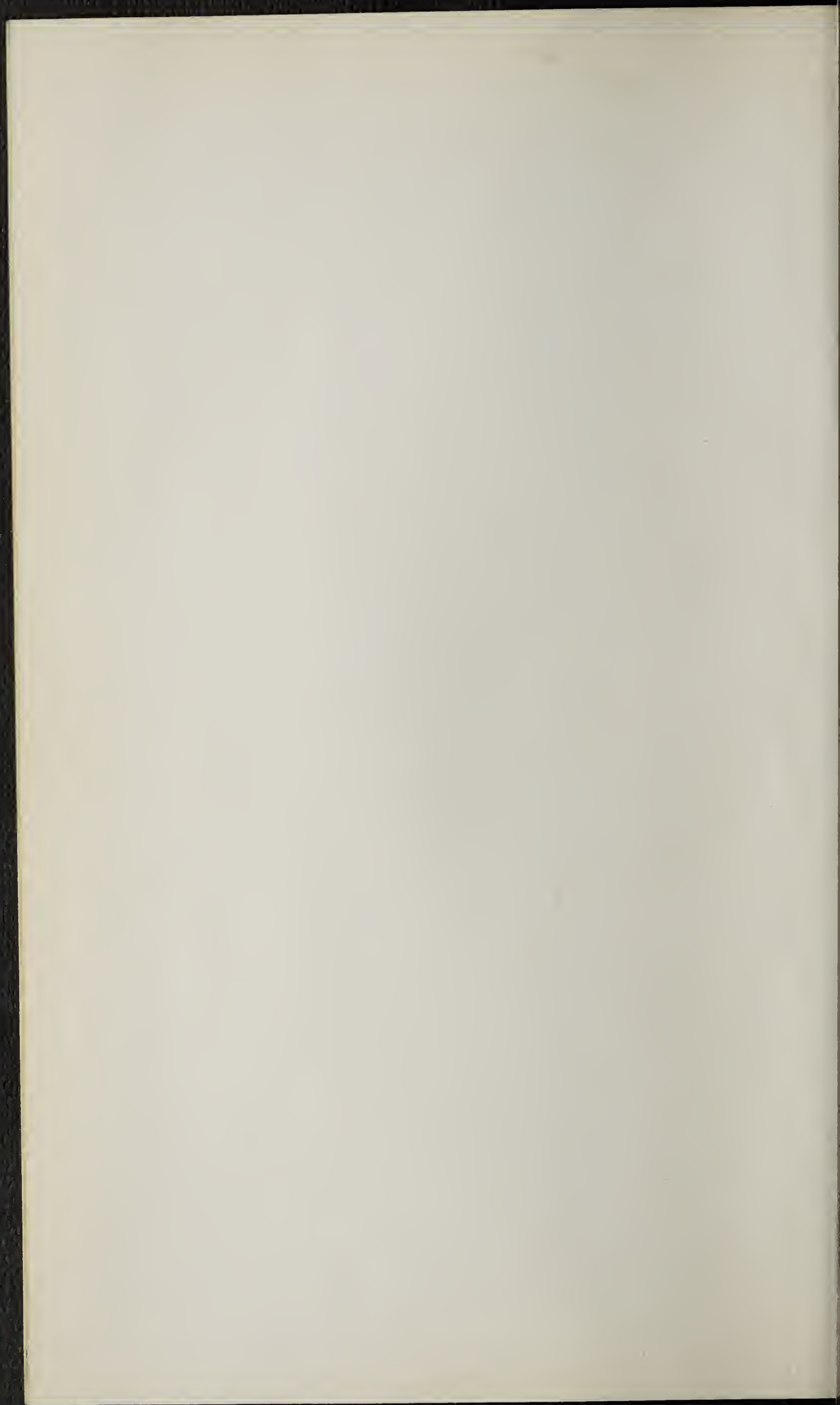
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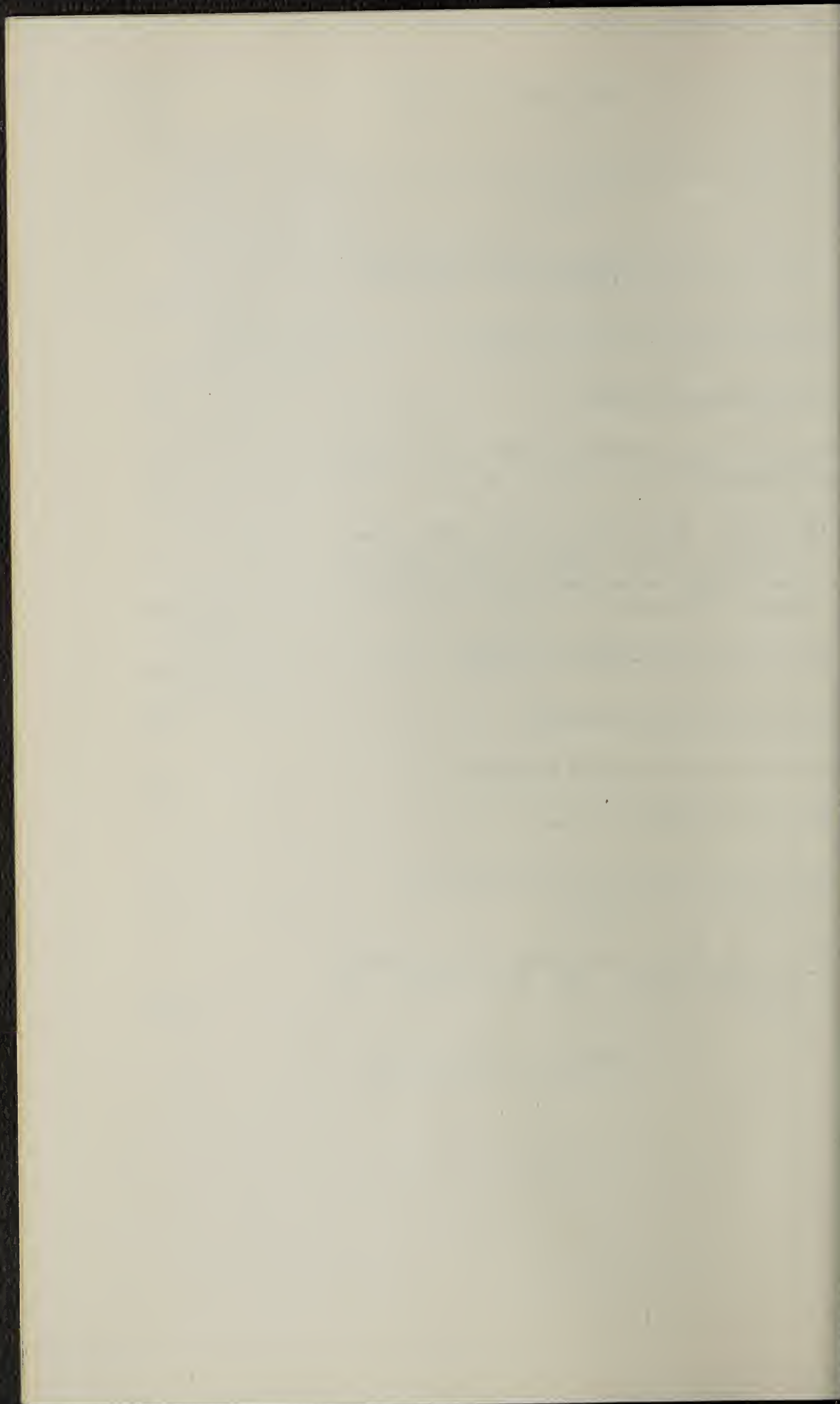
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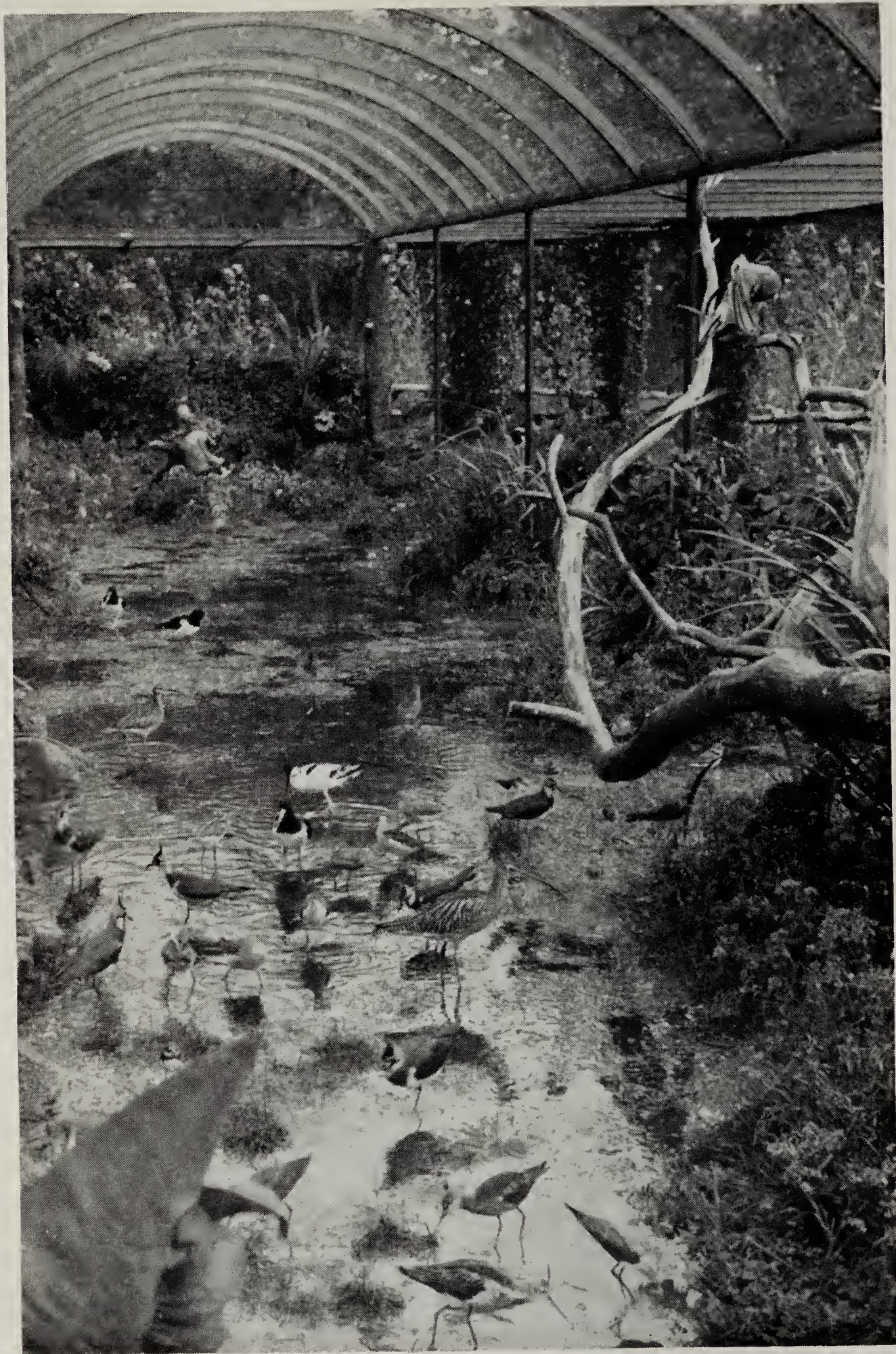
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[Léon Lippens

WADERS' AVIARY AT "ZWIN", BELGIUM.

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THE JOURNAL OF THE AVICULTURAL SOCIETY
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JANUARY—FEBRUARY, 1956

KEEPING WADERS IN AN AVIARY

By LÉON LIPPENS (Le Zoute-Knokke, Belgium)

A few years ago a paper about the charm of keeping Waders in aviaries by a Belgian scientist, Dr. J. M. Derscheid, who died in a German concentration camp was published in the AVICULTURAL MAGAZINE.

In 1952 I started a modest experiment myself at Le Zoute-Knokke, a seaside resort along the Belgian coast, near the Dutch frontier and facing the estuary of the River Scheldt. My family owns there a stretch of dunes, woods, and a little salt-marsh called "Zwin". The "Zwin" is all that actually remains of a big estuary up which boats sailed to Bruges in the Middle Ages.

We have made a Reserve of this site. The birds being protected, many interesting species breed on the salt marsh and in the vicinity: Avocet (30 pairs), Redshank, Kentish Plover (60 pairs), Shelduck, Little Plover, Hoopoe (5 pairs), Golden Oriole, Icterine Warbler, etc. The variety of breeding birds is great: ninety-five different kinds are recorded as breeders.

To help the public know all these birds better we built a few aviaries in which we keep, in the summer months, most of the birds of this country. No exotic birds are kept. Last year, 1955, we showed about 100 birds of 100 different species. Most of these birds are caught in spring and are released at the end of the summer. The birds are caught in different ways and several thousand are ringed each year to study their migration. Only relatively few are kept for the aviaries; if a bird does not seem to thrive in a cage it is released immediately. This system explains how all our birds are in immaculate plumage and in perfect condition.

Some birds are more difficult to keep in captivity than others, for instance, Snipe, Green Sandpiper (*Tringa ochropus*), and Little Plover (*Charadrius dubius curonicus*). One or two out of ten, however, seem to have a different character altogether and get very tame, and even seem

to enjoy being in an aviary. We keep these and release the others after one or two days. There is practically no mortality. Waders are charming birds and get very tame indeed after a few days, coming to eat mealworms a few inches away from the keeper.

During four years we have gained a lot of experience, and this summer we succeeded in keeping in perfect condition the following : Golden Plover, Grey Plover, Lapwing, Turnstone, Ringed Plover, Kentish Plover, Little Plover, Dunlin, Curlew Sandpiper, Knot, Little Stint, Temminck's Stint, Oystercatcher, Curlew, Whimbrel, Avocet, Bar-tailed Godwit, Redshank, Greenshank, Spotted Redshank, Wood Sandpiper, Green Sandpiper, Common Sandpiper, Snipe, and Ruff.

The ideal conditions in which to keep Waders is to provide them with a big aviary. (The one in the picture is 63 feet long and 18 feet wide.) In it one can keep all the Waders together, from the little Stint to the big Curlew, without any inconvenience. The birds can fly and there is room enough for every one to choose a small "territory" ; there is little fighting.

In this big aviary I kept more than 100 birds together this summer with no loss. In it there is a miniature artificial marsh which provides the very soft soil Waders need. It also gives them the opportunity of taking a lot of exercise finding their natural food.

This natural food exists in the shape of flies and insects coming in from the outside and settling on the mud. On sunny days it is a pleasure to watch the Sandpipers, among others, hunt flies in the same way as lizards do ; they suddenly freeze and advance very slowly with the beak pointed forward ; then, faster than the human eye can follow, they snatch a fly and swallow it. In some places hidden by shrubs we place banana skins or some half-rotten pieces of meat to attract more flies ; and it helps a lot. We do the same to keep Flycatchers and Wagtails.

The most important thing for keeping Waders in good condition is to provide them with a run of good soil. They have very tender feet indeed ; white sand or ordinary soil is useless and even deadly. After a week on such a surface most of the birds would begin to limp badly.

Inside our Wader aviary there is an island surrounded by water 3 to 4 feet wide and from $\frac{1}{2}$ inch to 15 inches deep, with here and there a flat stone placed just under the surface of the water. This circular watercourse is built of concrete. As concrete is bad for the feet of the Waders, we never brush or clean it. After a week a sort of muddy moss grows on it ; it grows even faster when we lay a few sods of grass under the water. In these sods, by the way, live little red worms, which seem to be much appreciated by the birds.

The island itself is of grass and is 1 inch lower than the edge of

the water. Once or twice a day we let the water rise and flood the whole island. This creates a perfect natural marsh and it is wonderful to watch birds getting excited and active the moment the flooding starts. Under the grass we placed a layer of clay (10 inches). The water trickles very slowly through the clay ; in fact, it takes about an hour and a half before it has disappeared. The grass keeps very green and soft ; here and there little mud pools remain. We replace a few yards of turf from time to time during summer.

Birds never get dirty looking because they can always wash in the circular watercourse and they are clever enough to choose the right depth and as near as possible to the place where the fresh water runs out of a pipe. This pipe is hidden in plants and rocks.

The food given to the Waders is a mixture of raw meat, carrots, biscuits, a few mealworms, and some maggots. I do not know where the difference lies, but the birds seem to prefer maggots from rotten fish to maggots from rotten meat. A good way to accustom new birds to their new diet is to scrape the bottom of a near-by marsh with a specially made small net of very fine metal mesh. Sand and water flow through it and all kinds of insects and larvae are caught. Thrown into the water of the aviary, they form a natural food and provide excellent exercise for the birds who catch them.

The system of flooding the aviary possesses another advantage ; the droppings of the birds are washed away before they actually dry and the aviary always keeps clean.

We think that aviaries with a flat roof are dangerous because birds flying up hurt their heads. We built the centre of the aviary in a semi-circular shape and I notice that birds seem to like flying up and down this sort of passage. The total height of the cage is about 10 feet, and is high enough for birds naturally keeping on the ground. The aviary is planted with marsh plants taken in the neighbouring marshes. They grow well as the aviary is regularly flooded.

Between the circular waterway and the wire there is a stretch of ground about 10 to 20 inches wide. To prevent birds—especially freshly caught ones—running up and down along this wire (always an unpleasant sight) we put a few stones, small logs, and some dense plants like water irises all along it. The tame birds perch on these stones and logs and the wilder ones keep nicely on the central island where they can be seen. They have no chance of hiding and get tame very quickly.

A roof or a protection against rain is useless. Waders enjoy rain. Some shade is provided by a few climbing plants like *polygonum*.

Waders kept in such an aviary look perfectly happy and natural and I could watch them for hours flying, bathing, feeding, squabbling, calling migratory birds passing high in the sky.

In October, 1954, we released nearly all our Waders. Some of them

kept near the aviary for a few days and then migrated south or flew to the Scheldt estuary. In February, 1955, a cold spell arrived and, to our surprise, one morning an Oystercatcher and a Redshank were pacing up and down in front of the aviary where we still had half a dozen Waders. We caught them and put them in with the others until the weather changed. They felt at home at once and when we let them go again they did not attempt to fly away, but kept in the vicinity until April.

In our Nature Reserve we keep—on several ponds—all kinds of local wild duck and geese. As I like to see them fly, every spring I catch a certain number of Teal, Garganey, Wigeon, etc. Instead of pinioning them I just cut the wing feathers. These grow again in June–July but in the meantime these birds are so accustomed to the public that many eat out of people's hands. They remain here as full-winged birds until the winter and some of them even until the following spring. Most of them, of course, disappear with the mating season but some come back in September.

We do the same thing with several species of gulls and also with some Bean Geese. It is fascinating to watch a huge Bean gander flying low over the heads of visitors, with all the other geese, on the ground, calling loudly ; after a little circling around the gander stretches out his big webbed feet and makes a nearly vertical landing on the water.

On the 20th September of last year we gave their freedom back to more than 300 birds, most of them Waders and insect-eating birds. We ringed them and wished them a happy journey south.

We love our birds, all of them, but probably most of all, our Waders, those most fascinating, mysterious, handsome, and charming of birds.

* * *

A FERTILE HYBRID

By the REV. J. R. LOWE (Cirencester, Glos., England)

It was in May, 1954, that I placed a pair of wild Turtle-Dove eggs under a pair of Barbary Doves. They duly hatched and grew apace, and were a cock and hen. They wintered in an attic with no artificial warmth.

In early March the cock Turtle was placed in an aviary with a Barbary hen, and the hen Turtle was joined up in another aviary with a Barbary cock, and called Pairs A and B. By mid-March the cock Turtle was displaying and it was a little strange to hear a song that one would not normally hear till May. By mid-April the Barbary hen of Pair A was sitting on fertile eggs ; these duly hatched.

Now in October they have assumed adult plumage. The cock has a pale grey front tinged with a vinaceous wash, the head and

neck a slightly deeper grey, the wings and back pale brown, with only faint markings compared to a pure Turtle's wings, tail dark grey, each feather tipped with white, flights dark grey. Collar not chequered as in the Turtle, but solid black bordered top and bottom with narrow white band, the whole effect more like two patches as in the Turtle collar. Iris of eye hazel, not ruby as on the Barbary. On the whole this cock favours the Turtle rather than the Barbary.

The hen of Pair A is a uniform dun colour with slightly darker flights and tail, collar small and chequered as in the pure Turtle. For reference these two young birds may be called C and D.

Pair B did not nest till May, and one wondered if the delay was because of the usual times of laying by migratory Turtle hens. Two young birds duly developed adult plumage and they are identical and look very like pure Barbarys, rather richer in colour, i.e. deep biscuit fawn; in one the collar is pronounced and chequered, in the other collar hardly visible, but what there is is chequered; iris of eye hazel not ruby. In the results from Pairs A and B the cock from each pair seems to have influenced the colour of the young.

In August the bird C was cooing and displaying; both coo and display is a curious mixture of Turtle and Barbary amusing to watch and hear.

C was placed in an aviary with a 1953 Barbary hen on 9th and 20th September. Two young were hatched from this pair and to date, 5th October, are nicely feathered and both in brownish plumage are identical with D, the young hen from Pair A.

In the spring of 1956 it is hoped to pair the pure hen Turtle to her hybrid son E, hybrid cock C to hybrid hen F, and pure Turtle cock to his daughter D, and the September 3rd generation, back to pure Barbarys and Turtles *inter se*.

If all these matings are fertile one may assume any amount of pure Turtle blood can be introduced into a Barbary strain as required.

I do not expect for one moment that these results are in any way new to aviculture, but it has been fun proving things just for oneself, though I doubt if any of the above deserves to be incorporated in so august a journal as the AVICULTURAL MAGAZINE.

Note—Since writing the above the iris of dove C is as ruby as pure Barbary. This is not true of the other hybrids.

* * *

BREEDING THE TIMOR COCKATOO

(Kakatoe sulphurea parvula)

By S. BRIAN KENDALL (Chertsey, Surrey)

I bought my Timor Cockatoos in the autumn of 1952, while the importation of parrots was still allowed, the *expert* who sold them telling me that they had been imported in the previous May and that they had "not quite finished moulting".

It was nearly two years later when their vicious feather biting abated and it is my personal view that it was for the rehabilitation of the pair, rather than for their successful breeding, that their owner deserves some credit. Every conceivable device was adopted at some time or another—more protein, less protein; green food; sprouted seed; fresh branches; an outdoor aviary; separation and reunion; an aviary where they could hide, and one where they couldn't. I *think* they stopped feather-biting after the 1954 moult, but the cock was still not fully flighted until some time in the spring of this year (1955). The secret of how to stop the vice remains with the cockatoos—I have no idea, but I rather doubt if it has much to do with diet.

Timor Cockatoos are similar to the better-known Lesser Sulphur Cockatoo, from which they can be distinguished by the considerably less well developed areas of sulphur-yellow on the back of the head and cheek, and by the virtual absence of yellow on the chest and belly. In addition, they are markedly smaller; hens are often really tiny and must be the smallest cockatoo that exists.

Adults are readily sexed by the eye colour, that of the cock being almost black while the hen is red-brown. Immatures have clear-grey eyes. I do not yet know when the colour changes. Males appear to be considerably bigger and the more massive head serves to sex them as with all the related species that I have seen.

As the popular name suggests, the main home of *parvula* is in Timor Island. Skins in the Natural History Museum, South Kensington, are labelled East Timor, South Flores, Pantar, and Lombok. I have not been able to glean any information on the habits of the species in its native land. Observation in aviaries suggests that they are arboreal in general habit; mine never seem to go on the ground except to reach food or water dishes. As with the Citron-crested Cockatoo, hawthorn berries are immediately accepted as attractive food, which suggests that something similar may be a favoured food in the wild. My birds, like the rest of the cockatoos, receive a staple diet of oats, wheat, barley, and cracked maize with sunflower. They eat a little apple, rarely seem to be interested in green food, but eat bread and milk and hard-boiled egg and bread-crumbs *when they have been trained to do so*.

In January, 1955, the pair were together in an aviary, about 15 feet

long, 6 feet wide, and 6 feet high, with some overhead cover forming an open-fronted shelter. Like all their near allies they seem to be as hard as nails. Nest-boxes (a grandfather's clock and a grape barrel) were placed in the flight in early March, but up till 22nd May there was no evidence of nesting. On that date I surprised one feeding the other (I don't know which) and heard the end of some of the mutual beak clicking which is so characteristic of the display of the Citron-crested Cockatoo. A few days later they started opening up the grandfather's clock. In mid-June the male disappeared during the daytime, and on 26th June both birds disappeared for a time. On 13th July both birds roosted in a box at night. By 20th July the pair was definitely sitting. I would estimate that an egg was laid about 14th July. Young were definitely heard on 7th August, and may have been heard two days earlier, so that incubation takes about three weeks. This suggests that the incubation period is decidedly shorter than with *K. sulphurea cristino-cristata*, the breeding of which was reported earlier (Kendall, 1955), but it must be stressed that I never examine nests, progress being assessed solely by the behaviour of the birds.

It is hardly necessary to say how thrilled I was to hear the first baby noises. Throughout the entire incubation period I had kept religiously to the side of the aviary remote from the grandfather's clock nest. Long and lovingly I looked at that grandfather's clock. The barrel, which had been the second string, seemed rather redundant in the flight, but it had served a useful purpose as an exercise for the occupants' beaks, and on 29th August I noted in my aviary diary the interesting fact that the parents occasionally bolted into the barrel and *not* into the grandfather's clock. I couldn't help thinking how fortunate it was that they had chosen the nice deep healthy grandfather's clock and not the flimsy barrel in which undoubtedly the eggs would have desiccated and the young died of dryness if not cold.

On the last day in August, while feeding the birds one sunny morning, my eyes happened to move from the clock to the barrel and there, practically in the open air, fully exposed to the public gaze on a level with the hugely excavated opening of the barrel, were the young Timors !!! So it comes about that, as long as the sun was shining, records on the Timor Cockatoo increased as never before. When first seen the parent bird was sitting at right angles to the entrance hole with a young bird by the side and with the other, presumably, on the other side or actually covered. On 3rd September, a good view was had of one young bird which appeared to have no feathers at all. Six days later two young were seen, with quite well developed crests but with the body in quill. On 18th September the young appeared to be reasonably well feathered. On 28th September I looked into the barrel and saw two well feathered young, the eyes

appeared dark, the head sizes gave the appearance of a true pair, while the beaks were light horn-coloured ; quite different from their parents or from Citron-crests of similar age. On 14th October one young bird looked out, probably for the first time. Beak and feet were horn or flesh-coloured. This bird emerged on 16th October, and roosted in the open flight with a clear star-lit night and the sharpest frost we have had so far this winter (1st December). Emergence from the nest seemed to coincide with the reversal of the hind toes. On 17th October the young bird sat out in miserable cold and sleet. *I* suffered infinitely more than he. I managed to get a tarpaulin over his part of the flight, whereupon he moved under the open wires, where it was presumably less stuffy !

So I managed to rear (for, I believe, the first time in Britain) a baby Timor Cockatoo. He has never looked back, and although at the time of writing, still with the parents, is probably self-supporting.

Up till the time the young Timor fledged, there had not appeared to be a tremendous difference in development between the two young, although one was clearly several days behind the other. I fully expected the second to fledge within a week of the first and as the days went by I reassured myself that "Beta" was still alive by walking into the aviary and closely investigating the barrel. Sure enough "Beta" was there, a little thin on top, sitting close to the entrance hole and always closely guarded by father, who, incidentally, does nearly all the day-time nursing.

So the days went by, until 1st November, when, my worst fears realized, I had to take the barrel to pieces in order to release the leg of the young bird, trapped for at least ten days between two staves of the barrel.

I felt very upset about the whole business, and went through the usual bird-keeper's misery of blaming myself for not having supplied a sounder barrel, not having looked earlier, etc. (but *not*, be it noted, without the thought that if they had had a sounder barrel they might not have nested anyway). At the time I was inclined to destroy the baby, for the leg seemed hopelessly crippled. What followed is a story in itself and must be left for another time. One thing that is certain is that my friend "Joe", who at this moment is sitting on my foot pretending to learn to crack a sunflower-seed, will never believe that his adopted father ever could have contemplated his destruction on that horrible morning only a month ago.

Ref. Kendall, S. B. (1955). *A.M.*, 61 (5), 226-8.

As described above, S. B. Kendall has bred the Timor Cockatoo (*Kakatoe sulphurea parvula*). It is believed that this may be a first success.

Any member or reader knowing of a previous breeding of this species in Great Britain or Northern Ireland is requested to communicate at once with the Hon. Secretary.

* * *

TWO FIRST BREEDINGS AT THE KESTON FOREIGN BIRD FARM (SEASON 1955)

By EDWARD J. BOOSEY (Keston, Kent, England)

There have been two first breedings at Keston this season, namely the Chestnut-and-Black Warbling Finch (*Poospiza nigro-rufa*) and the Yellow-headed Marsh Bird (*Agelaius icterocephalus*). One young bird was reared in each case, but, unfortunately, only the Warbling Finch is eligible for a Medal, as the young Marsh Bird, although it lived for some time after fledging, died before it was fully independent of its parents.

Incidentally, its death may serve as a warning to those who may be thinking of using inch mesh instead of half inch netting for an aviary. The former is, of course, quite all right for larger birds, but there are borderline ones, and this Marsh Bird is a case in point. Inch mesh netting successfully contained the adults, but the newly fledged young one could pass through it with ease and, as it was constantly getting out, it had to be caught up and put in a cage in the aviary. The hen was seen to feed it through the bars but it did not make the progress it would have done loose in the aviary, and although an excellent specimen when first fledged it eventually died.

The male Marsh Bird is simply black with a bright lemon yellow head and an area of black round the eye, while the female is very dark brownish-black with her head faintly suffused with greenish-yellow. The young bird resembled its mother.

They constructed a deep cup-shaped nest in a hawthorn overhanging the pond in our largest aviary, and as is the case with so many birds, the cock's character changed entirely as soon as they started breeding. Despite the fact that the aviary was so large and thickly planted he hunted out and actually murdered another cock Marsh Bird, with which, when both were bachelors, he had lived for a year in perfect amity.

He jealously guarded the vicinity of the nest as he sat on a projecting branch close by, frequently uttering his loud shrill defiant song as a sort of challenge to all comers, and chivvying the hen back to the nest if he thought she was being too long collecting food.

Although they ate insectivorous mixture, bread and milk, and a certain amount of millet spray and canary, the young one, which was fed only by the hen, was largely reared on insects that she caught in the aviary, as well as a large daily allowance of gentles and a small one of mealworms.

The Chestnut-and-Black Warbling Finches shared their aviary with a pair of Cape or Namaqua Doves, its dimensions being 10 feet long by 4 feet wide by 7 feet high, and it was in a very sunny, sheltered position.

It contained no bushes, but our General Manager, Mr. Cummings, who was looking after them, had the bright idea of fixing a tangle of "Old Man's Beard" high up in a corner of the flight, thus at last finding a use for this weed which is such a curse in certain soils, and at the same time providing the Warbling Finches with a nesting site that they took to at once. In it they constructed a very neat little cup-shaped nest, and soon the hen was incubating three bluish-white eggs spotted with black and dark grey at the larger end.

All the eggs however proved to be clear, and it was at about this time that the birds were given a few mealworms each day in addition to their usual supply of gentles. The hen soon laid again, and after sitting for some time on two clear eggs, deposited a third which was hatched and reared into a very fine young one. It is not like either of its parents, being simply grey with darker central and whitish outer tail feathers and a whitish eyebrow streak.

The male of these Warbling Finches is a very smart and immaculate little bird rather resembling a Blackcap in shape, and certainly not in the least finch-like. It is very dark slate-grey above, the eye being in a black area with a white stripe above and below it, and the forehead is also black. The two central tail feathers are almost black, and the two outer ones white. The belly is white and the rest of the under-surface rich chestnut. The female is simply a much paler and duller edition of her mate.

The Warbling Finches come from South America, and the length of the Chestnut-and-Black is about 5·8 inches.

The cock bird is an industrious and tuneful, if slightly monotonous, songster, and despite his name his song has none of the lovely liquid notes of the true Warblers such as our own Garden-Warbler and Blackcap, and is more bunting-like in quality. Nevertheless, it is a very cheerful attractive little song.

Very few of the genus *Poospiza* seem ever to have been imported at all, and then only occasionally in ones and twos. Prestwich, always a mine of information on such subjects, kindly supplied me with the following information about *nigro-rufa*: "Chestnut-and-Black Warbling Finch: De Quincey brought two about 1924. The Zoo had one in 1932, listed as new to the collection." "There are," he

added, "sixteen species of Warbling Finch of which only six appear to have been imported."

Although I think our pair might possibly be wintered successfully in one of our sheltered terrace aviaries without heat, they and their young one have just been given a lamp in the same aviary in which the parents successfully passed last winter, in order to avoid running unnecessary risks.

Incidentally, this necessitated catching them up and the hen was found to have gone to nest for a third time, incubating three eggs, but it was too late for there to be any chance of her successfully rearing young.

Our pair eat a certain amount of canary and millet spray, but to flourish they need a more varied diet, including insectivorous mixture, bread and milk, gentles, a few mealworms, and occasionally a piece of apple which they sometimes eat and sometimes ignore.

As described above, E. J. Boosey has bred the Chestnut-and-Black Warbling Finch (*Poospiza nigro-rufa*). It is believed this may be a first success.

Any member or reader knowing of a previous breeding of this species in Great Britain or Northern Ireland, is requested to communicate at once with the Hon. Secretary.

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A NEW DANISH BREEDING RESULT—BREEDING OF THE COMBASOU

(*Hypochoera chalybeata chalybeata*)

By KARL NIELSEN (Køge, Denmark)

In 1951 Mr. Aage Nielsen, who also lives in Køge, Denmark, succeeded in breeding the Combasou. The Combasous were "parasites" on a pair of Firefinches, which fed and hatched the young Combasous.

In 1955 I succeeded in breeding the Combasou, but in this case the Combasous themselves constructed the nest, hatched, and fed the young.

In my garden I constructed an outdoor aviary, the rear of which is set up against a wooden fence. One-third of the aviary is covered at the rear, otherwise the aviary is open. I have not planted anything, I have only placed a lot of branches for perching. The aviary is about 14 feet long, 7 feet high, and 7 feet deep. Just under the roof in the farthest corner I placed a large roll of coarse meshed wire netting for breeding, the roll being about $1\frac{1}{2}$ feet in diameter and filled with pine twigs.

I am somewhat a novice in the noble art of bird-keeping, and don't know much about the birds in my collection—which for the present consist of 1,1 Bengalese with seven young, 2,0 Green Singing Finches, 3,1 Common Amaduvade Waxbills, 2,1 Cordon-bleus, 1,0 Firefinches, 1,1 Canaries with eight young, 1,1 Blue-breasted Quails with nine young, 1,1 Combasous, and a lot of Zebra Finches.

I have been strongly advised to clean up this collection, especially the Combasous, which, I was told by experienced bird-keepers, would most likely act as nest-intruders.

About the 1st July I saw the male Combasou gather dry grasses, hemp, and other kinds of nesting materials, but I didn't pay much attention to this, as I had read and heard that the Combasous were parasites, and placed their broods in the nests of other birds, who then hatched and fed the young. It was only when I saw just one of the Combasous at a time in the aviary that I became suspicious that something was about to happen.

I didn't dare investigate the nest, which was placed in the wire netting, and was very loosely constructed of grass and hay, with the entrance sloping down. In the middle of July I again saw both of the Combasous in the aviary at the same time, but only for a short visit. Then the female returned to the nest again. I can't say if they took turns in hatching, but I noticed that they were both in the nest at night.

About the feeding, I have learned that both the male and the female are ardent feeders as long as the young are in the nest. It always happens in this way—first the female enters the nest, and directly after her the male. The male is always the first to leave the nest, perhaps the direct feeding is undertaken by the female alone.

On the 3rd August, two fledgelings left the nest, and now these two fledgelings are fed by the male only. The female has no interest at all in the young, even if they are begging her for food. Now and then I have seen the young begging Zebras and Cordon-bleus for food. Sometimes they succeed, but it also happens that they are pecked at instead of getting something to eat.

The male Combasou guards his young most carefully, and will not tolerate their being harmed by any other bird. The female is, as stated above, quite indifferent. In spite of the fact that the fledgelings left the nest seven days ago, they spend the nights with their parents in the nest.

I have had the Combasous about one year, and the former owner had them for about the same period.

Note.—The Hon. Secretary of the Avicultural Society, Mr. A. A. Prestwich, writes :—

I have no record of a similar success in Great Britain. The nearest

approach is the event described by Mrs. M. Boyd in *Bird Notes*, 1914, 338, where she says she has had one young bird reared by Cordon-bleus. "The hens of the respective pairs (Combasous and Cordon-bleus) each laid eggs in the same nest, the Combasou three and the Cordon Bleu four. The Cordon-bleus alone incubated . . . of the seven eggs only three hatched out, one Combasou and two Cordon-bleus, but the latter were not fed; the young Combasou, however, did well and is now fending for itself." This happening is in keeping with what is known of the Combasou's habits in freedom, where they lay their eggs in the nests of Firefinches and the like and leave them to bring up the young.

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MY BIRDS AT LOS ANGELES AND AT CLÈRES, 1955

By J. DELACOUR (Los Angeles, California, U.S.A.)

If you want to keep a close eye on your collections it is sometimes a little inconvenient to have birds in two different places 6,000 miles apart. But special circumstances, which often crop up nowadays, have caused unforeseen conditions. I am probably the only aviculturist with aviaries in California and in Normandy at the same time.

My Los Angeles collection consists of some 200 birds, mostly small, while we keep at Clères ten times as many, particularly large species, which are in charge of Mr. F. E. Fooks. My aviaries in California, even in number, are my own responsibility, with some help from my chauffeur. Unless I am away I myself feed all the birds early every morning, and it is just as enjoyable to me as it was when I had a few cages in my bathroom during my childhood in Paris.

In Los Angeles five Flamingos and two Trumpeters live at liberty in the half-acre garden and cause no trouble. The Trumpeters are delightfully tame and amusing. My collection of doves is excellent. I have added to it since last year a pair of the very rare Grey-headed Ground Pigeons from Cuba (*Geotrygon caniceps*), an almost extinct species, Jamaican Doves (*Leptoptila jamaicensis*), and pairs of Thick-billed and Pink-necked Green Pigeons (*Treron nipalensis* and *T. vernans*). The unique pair of Chiriqui Ground Pigeons (*Geotrygon chiriquensis*) which I brought from Costa-Rica two years ago have now reared fourteen young, and they never cease to lay and to sit throughout the year. A pair of Bartlett's Bleeding-hearts reared four and let two young die in the nest; they also nest continually. It is interesting to note that this species lays only one egg per clutch, while the very closely related Luzon Bleeding-heart lays two.

Besides two Mountain Witches, four Brush Bronze-wings, and a number of small Doves have been reared (Peruvian, Pygmies, Ashy, Silver Diamond). Philippine Pheasant-tailed and Jobi Doves; Ruddy, Blue-headed, Moustache and Martinique Ground Pigeons, and Nicobars did not nest successfully. Among the Australian Finches, which are doing exceedingly well outdoors in California, a number of Diamond Sparrows, Parson, Heck's, Long-tailed, Bichenow, and Cherry Finches were reared; also two *pectoralis* and one Blood-Finch (*phaeton*). The latter species is rather insectivorous and does not breed too easily; it is very spiteful and must be associated with stronger birds only. Mine share their rather small aviary with Orange and other Weavers and Whydahs, as well as Doves and Quails. Twenty-two Gouldian Finches have so far been reared by five pairs and there still are young and eggs in the nests. I find that several pairs do well together in a small aviary, but no other species should be associated with them. A European Bullfinch was also reared in the next aviary from the one fertile egg of two clutches. A number of Painted Quails were reared by the parents.

A pair of full-winged Mandarin Ducks reared nine young in the large aviary over the stream, but the Hawaiian Mallards did not succeed, again dropping a few eggs here and there. They have since been sent to Clères, as well as pairs of Germain's and Palawan Peacock-Pheasants, as more suitable accommodation for such birds exists there.

A few new birds should be mentioned. In January I received a Green Cotinga (*Pipreola aureopectus*) from Colombia, a present from Mr. Ray Thomas, along with a male Purple Sugar-Bird and a male Blue-rumped Green Tanager (*Chlorophonia frontalis*). I kept them indoors in a large cage, then put them out in March. I find that in the climate of Southern California delicate tropical birds must have some artificial heat if they arrive during the winter. Once they have spent a summer outdoors they stand the following winters perfectly, and never need being brought in again. The Green Tanagers, usually considered difficult to keep, do very well and live long on a diet of crushed banana, egg, and pound cake, with the addition of grapes and other soft fruit. I also have a Red-bellied Niltava in perfect condition, which is never given any mealworms; it eats a great deal of cheese and some fruit, particularly pear.

Clères continues to be prosperous, therefore well kept and well stocked. I was there part of June and July, and it looked much as it did before the war, with the exception of some of the tropical houses and the large paddocks across the road, which it has not yet been possible to remake. Among the new arrivals are pairs of Leadbeater's, Philippine and Moluccan Cockatoos, and a pair of Hawk-headed Parrots. The collections of Pheasants and Waterfowl are growing and a number of young have been reared; 4 Magellan's, 8 Blue-winged,

5 Ashy-headed, 6 Blue and White Snow, 2 Lesser White-fronted, and 3 Emperor Geese; a number of Red-crested Pochards, Red-heads, Black Ducks, Carolinas and Mandarins, Versicolor, Chilean, Cinnamon and Green-winged Teal, Gadwalls and Chiloe Wigeons; Temminck's Tragopans, Mikado (8), Elliot's, Cheer, Horsfield's, Imperial (2), Reeves', Amherst's, Golden, and Silver Pheasants; Sonnerat's and Red Junglefowls; White, Common, and Black-winged Peafowls; wild Turkeys. Three Ocellated Turkeys were raised up to five or six months, then died. I am afraid the climate of Normandy is unsuitable for this beautiful species. The Andean Geese hatched five young, but did not rear them, mainly because of the gander's ferocity. Many Doves were also reared, including Grayson's, Brush Bronze-wings, Mourning, Crested, and Diamond.

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BREEDING BOURKE'S PARRAKEETS THE HARD WAY

By R. G. KIRKHAM (Clonskeagh, Co. Dublin, Eire)

This year I decided to put up two pairs of Bourke's Parrakeets; my old breeding pair which had raised families for me for the past three years and a young unrelated pair of early 1954 birds. The old ones went to nest immediately I put in their nest-box and the young pair followed suit about two weeks later. Five eggs were laid by the old pair and four by the young pair and both hens sat well. Three young were hatched in the first nest (one egg being clear and the other dead in shell), and everything appeared to be going well when Death reared its ugly head. I went down early one morning and discovered the hen lying dead on the aviary floor and the three chicks calling loudly for food. The cock sat on a nearby branch and surveyed the scene without interest, so I decided to transfer the three chicks to the other hen, whose eggs were just on the point of hatching. She accepted them without demur though I thought I detected a reproachful look in her eye. At this stage of the proceedings everything appeared to be going well so I departed on a business trip with a light heart.

Hen No. 2 had hatched two eggs out of her four during my absence and was then feeding all five, but the strain must have been too great as she was discovered dying one morning and before anything could be done for her she passed out, leaving five hungry mouths to feed. At this point my wife became desperate and sought the aid of Mr. Thomas McLaughlin, another Dublin member of our Society, as he had a pair of Bourke's with one chick. He quickly came over

in his car and took four survivors to his place (the youngest one having died before his arrival). Foster-mother No. 2 now took over and reared all four to maturity.

On the morning the first youngster left the nest Mr. McLaughlin went in to feed as usual, but was not expecting to find a young bird able to fly like a rocket, with the result that immediately he opened the door the young rocket flashed past him and away into the morning sunshine. I gather he spent the best part of the morning looking for the truant without result, and so he resigned himself to the loss and comforted himself with the knowledge that at least he still had three safe and sound. Hours passed—twenty-four to be exact, and great was his joy to find on the following morning, the young Bourke's hale, hearty and hungry, sitting on the wire roof awaiting admission. This was quickly arranged and so the stock was again two adults and four young. This happy state did not last for very long as, a few days later, a hawk from the neighbouring woods dived down on the aviaries and caused such panic that two of the youngsters flew madly into the wire end of the compartment and were found shortly afterwards with broken necks. This early demise of two promising youngsters made Mr. McLaughlin very nervous of the remaining two and most anxious to see them safely back in their original home. He, therefore, caught them up and they are now living with their widowed fathers in my birdroom. During all the moving about, they of course all became mixed up and I now don't know the relationship of the young so they must not be mated together, as I feel very strongly that the stocks of Bourke's in the country should be carefully conserved new blood introduced if possible, and that close breeding should be avoided at all costs.

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OBSERVATIONS ON THE VOICE AND SOME
DISPLAYS OF CERTAIN PIGEONS

By DEREK GOODWIN (Virginia Water, Surrey, England)

INTRODUCTION AND ACKNOWLEDGMENTS

This paper is based on observations of Rock, Feral, and Domestic Pigeons (*Columba livia*), Stock-Doves (*C. oenas*), Wood-Pigeons (*C. palumbus*), Laughing Doves (*Streptopelia senegalensis*), and Turtle-Doves (*S. turtur*), both in freedom and captivity, Speckled Pigeons (*C. guinea*) and Spotted Doves (*S. chinensis*) in captivity and domestic Barbary Doves (*S. risoria*) allowed to fly at full liberty from April till November. Briefer and more intermittent observations have been made on various other species, chiefly captive specimens in the London Zoo. My experience with the Spotted Dove has, however, been restricted to four birds only, two of which I hand-reared last summer (date of writing this 31st October, 1955), and two adults that were given to me about the same time.

I am most grateful for assistance, either in the form of stimulating discussion on pigeon behaviour and/or in obtaining specimens, to Miss Terry Gompertz, Mr. Colin Harrison, Mr. G. T. Kay, Mr. Kenneth Simmons, and Mr. Bertram Stone.

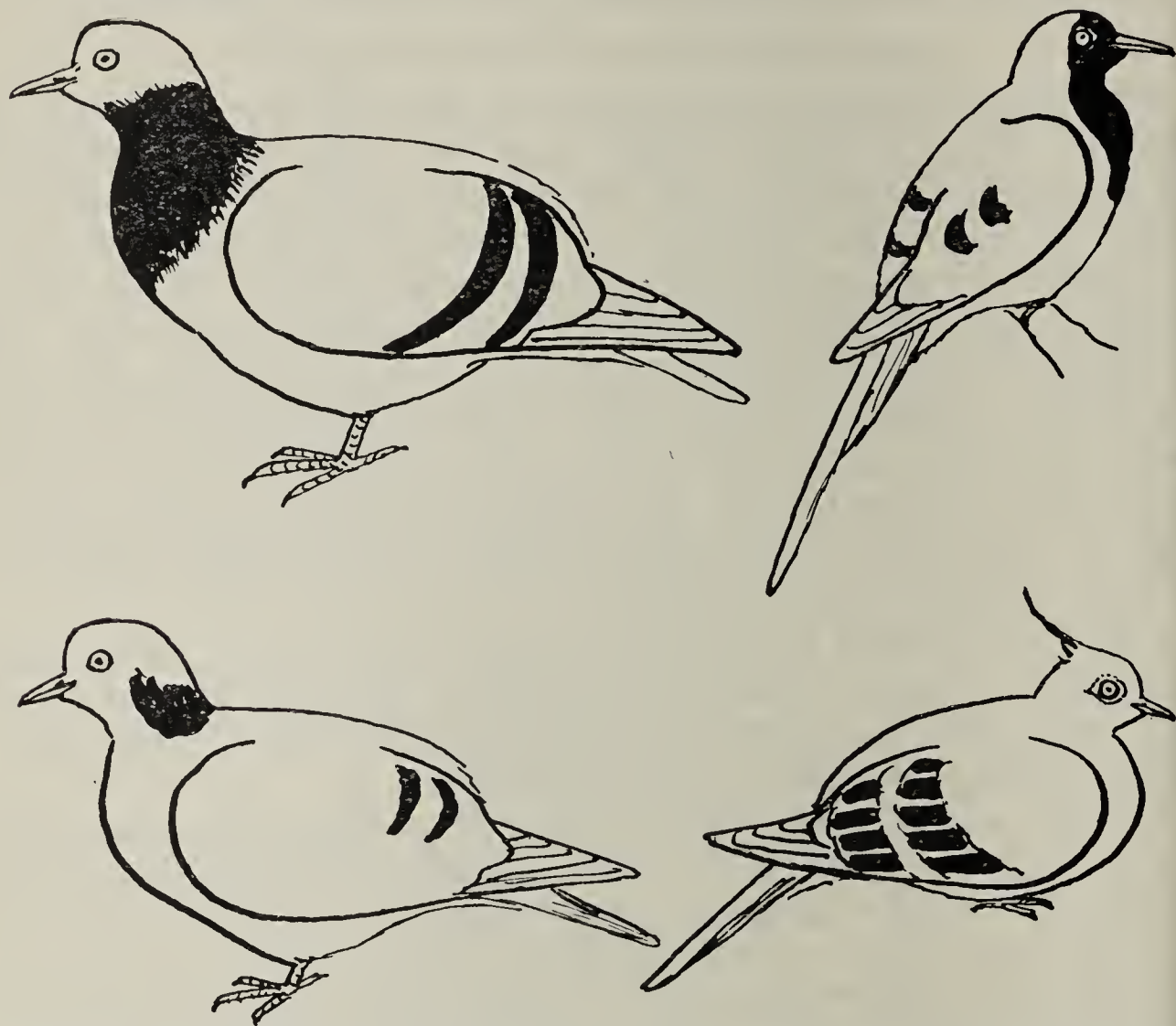
In my attempts to convey some idea of the sound of various calls I have used the following: "öö" sounds like the shortened oo in "foot" or "book" as pronounced in southern England, or as the u in "cut" or "rut" in northern English speech; "ōō" is a long oo as in "boot" or "coot". I have used "ěě" for the sound of the e in "keg" or "leg", but rather more drawn out.

DISPLAY-PLUMAGE

This term is here used for those areas of the plumage which serve the purpose of intra-specific threat or sexual display. Such plumage (in pigeons) also serves its "everyday" functions, but I consider it justifiable to term it "display-plumage" if (1) the modifications shown have no apparent use other than in display, and (2) they are exhibited in a display that is directed at or elicited by a fellow member of the species and are emphasized by the specific movements of the displaying bird.

Display-plumage as above defined occurs most commonly on the neck and upper breast. Here a very large number of species and genera show areas of plumage differentiated by contrasting colour, texture, or form. These areas are always exhibited—usually by inflating the neck and erecting the display-plumage—in the bowing-display (q.v.). Black or iridescent markings on the wings are another common form of display-plumage. They may be exhibited frontally in the bowing-display, as in the Plumed Ground-Dove (*Lophophaps*

ferruginea), the Bronze-wings (*Phaps chalcoptera* and *P. elegans*) or dorsally as in the "wing-lifting" of the Rock-Pigeon and Stock-Dove. Conspicuous white markings on the wings, as in the Wood-Pigeon,



Rock-Pigeon, Stock-Dove, Masked Dove, and Crested Pigeon, with main display plumage shaded black. (The Masked Dove is not to scale. This species is about half the size of the Crested Pigeon.)

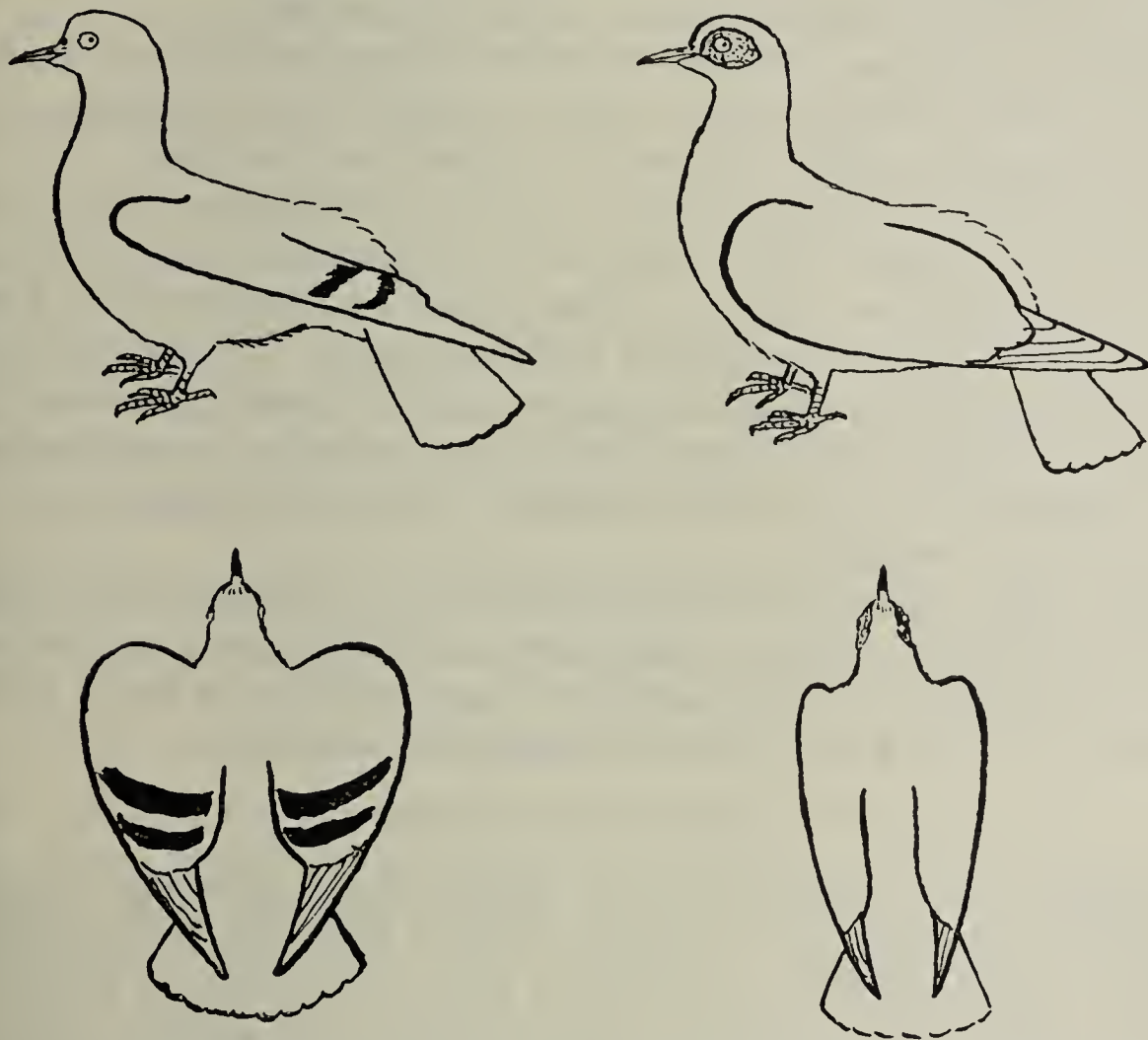
do not seem to come into the present definition of display-plumage. They do, however, probably serve a social function by attracting the attention of others of the species to a flying or alighting individual. They are automatically displayed when the wings are opened, but there are no special movements involved. White or contrasting markings on the tail may serve a similar function, but are often—perhaps always—part of the display-plumage. They are exhibited either in the display-flight as in the various Turtle-Doves (*Streptopelia* sp.) or in the bowing display as with the various species of *Geopelia* and the Wonga Pigeon (*Leucosarcia melanoleuca*).

The tendency for the lower back or rump to be pale in colour is so widespread in birds of different groups as to suggest some fundamental physiological cause. In many pigeons such pale areas have become developed as display-plumage, being emphasized by dark borders of adjacent regions. The northern races of the Rock-Pigeon, the Wood Doves (*Turtur* sp.) and the Masked Dove (*Oena capensis*) are examples.

These markings are displayed when the sexually excited bird erects its rump feathers and slightly opens its folded wings.

PARADING AND WING-LIFTING

When sexually excited pigeons walk with a rather high-stepping gait and exaggerated emphasis of movement. In *Columba* the head tends to be held high, in *Streptopelia* and *Geopelia* to be lowered. The wings are often somewhat lowered and primaries spread a little.



Left: Wing-lifting display of *C. livia* as seen from side and from above.
Right: Homologous posturing of Speckled Pigeon.

previously (Goodwin, 1948) called this "strutting", but this suggests a jerkiness of movement such as is shown by some gamebirds, and which is very different from the rather graceful deliberation of pigeons. Heinroth's term "Parademarsch", which I venture to Anglicize as "parading" seems therefore a much better one to use. Erection of the feathers of the lower back and rump is also usual under these circumstances. The movements above described seem probably due to tension caused by conflicting tendencies to approach and flee from the other bird. They serve, usually in conjunction with other more definite behaviour patterns, to indicate sexual readiness. Pumping towards or away from the other bird is also characteristic of most pigeons when in a state of sexual or aggressive excitement. I have not seen it in the Stock-Dove and in *C. livia* it seems to occur

only in connection with the bowing display. In the Speckled Pigeon, however, it is sometimes shown in aggressive situations.

The Stock-Dove and *C. livia* have a movement in which the folded wings are lifted and held in the same horizontal plane as the back. This is done—commonly in conjunction with parading—in response to the approach of a flying bird of the same—or sometimes an allied—species from above and (usually) behind. This is doubtless in origin a flight-intention movement. It serves now, however, to display the black wing bars to the approaching bird.

The Wood-Pigeon and the Speckled Pigeon behave in the same manner, lifting the head rather high, erecting the rump feathers, and often making the slight side-to-side movement, but they only very slightly open their wings, and do not lift and flatten them. These species have no such signal markings on their wings, the white band of the Wood-Pigeon and the white spots of the Speckled Pigeon appearing to have no significance in this situation. The signal function of the wing-lifting is at once apparent to the observer looking down on the bird from above, when the sudden increased conspicuousness of a Stock-Dove or naturally-coloured *C. livia* as it displays in this way is almost startling.

Many other pigeons of different genera (e.g. *Turtur*, *Oena*, *Claravis*, etc.) have black or shining wing patches similarly positioned to those of the Stock-Dove. I anticipate that these will also be found to have a display in which the wings are similarly exhibited.

THE DISPLAY-FLIGHT

Probably most pigeons have a display-flight, although so far it has only been described in any detail for a few. In those species of *Columba* and *Streptopelia* in which it is known it consists of flying with clapping wing-strokes, during which the wings are widely spread and move through a wider arc than usual, followed by or interspersed with gliding forward and/or downward with wings, and usually the tail also, outspread. I have discussed previously (Goodwin, 1955) the apparent correlation between form of display-flight, habitat, and tail markings.

As the Heinroths (1949) show, the use of the display-flight by *C. livia* (as in other species) indicates that the bird using it is (normally) in reproductive condition. The following are the stimuli that commonly elicit the display-flight in a sexually active male of this species.

- (1) When he notices another pigeon on the wing.
- (2) When he sees his mate or another pigeon in display-flight near-by.
- (3) When about to alight at or near his home after having been away foraging, or after having been taken away by man and thus forced to fly back.

(4) When flying in company with his mate (possibly then also as a response to some of the other stimuli listed above).

(5) Immediately after copulation (in about 40 per cent of cases only).

The female uses the display-flight in the first situation only if she is unpaired and in reproductive condition and then less often and less emphatically than a male in similar plight. Under all the other circumstances listed above she may use the display-flight if her mate first initiates this behaviour. I have never seen a paired female, in company with her mate, begin to clap and glide unless he first did so.

The function of the display-flight is to advertise the presence of a bird in reproductive condition. Unpaired females are strongly attracted to a display-flying male. So, apparently, are lost or tired specimens, a fact that has long been known to unscrupulous pigeon-keepers, who make use of unpaired males for stray-catching. Since such lost birds are usually repelled or frightened by the subsequent sexual advances of the male they have followed, it is probable that his apparent attraction for them is due to his making reciprocal efforts to maintain contact with them in flight, which other pigeons do not do. It sometimes seems, however, that in *C. livia*, as in man, lost or bewildered individuals have a tendency to follow any of their species who shows a self-assured and determined manner. Such behaviour would be useful to them since it would ensure that, sooner or later, they would be led to an adequate feeding ground.

The mood of the display-flying bird seems self-assertive and sexual rather than aggressive, but there are indications that thwarted or sublimated aggressiveness may at times be involved. The use of the display-flight (sometimes) after copulation suggests this, as many birds show aggressive or escaping movements at such time. In the early spring of 1955 workmen were repairing a tower in South Kensington where many feral *C. livia* had their breeding and roosting territories. Again and again pairs, single birds, or small parties would fly over to try to return to their homes but be forced to retire for fear of the men. Almost always the pigeons went into display-flight as, or immediately after, they turned back from their objective. Two Wild Rock-Pigeons (probably males, as it was about mid-day) that I flushed (separately) from hatching eggs in South Uist went into a low intensity form of display-flight as soon as they were about fifty yards away from me. In these cases the wings, although passing through as wide an arc, did not smite the air with such vigour and no audible clapping resulted. Such low intensity versions of the display-flight are often shown by a young Domestic Pigeon, if the group with which it is flying splits up and it is undecided for a few moments which birds to follow.

It thus seems likely that those elements of the display-flight which actually slow down forward movement—the wide slower wing beats, spreading tail, gliding instead of beating the wings—originate in a conflict between tendencies to move away from and to remain in or return to a certain area. Although in its perfect form the display-flight appears now to be quite ritualized it is nevertheless still shown—at least in its low intensity forms—as a response to such stimuli. The vigorous smiting of the wings shown in the normal display flight is due to self-assertive, or perhaps aggressive, impulses being superimposed on the (presumably) more primitive “slowing down” of the flying movements.

The causation of the display-flight and mood of the bird performing it appear to be similar in other species as that suggested above for *C. livia*. In those which defend a larger territory such as the Collared Dove (Hofstetter, 1952 and 1954) the display-flying bird more often carries over into attacking behaviour. In these species it is possible that the mood of the bird in display-flight is more overtly aggressive than seems to be the case with *C. livia*. I think, however, that the fundamental mood is self-assertive and only changes to aggression as a result of further stimuli (such as recognizing the bird whose appearance elicited the display-flight to be a stranger). Even the *Streptopelia* species will display-flight at times over “neutral” ground, as the Wood-Pigeon and Stock-Dove, as well as *C. livia*, frequently do.

THE DEFENSIVE-THREAT DISPLAY

In my previous discussion of this in the Barbary Dove (Goodwin, 1952) I called it the “Fear-threat display”. The present title seems rather better, however, being descriptive of its function. Erection of the plumage, lifting of one or both wings and spreading of the tail are shown. This display is given when the bird is activated by conflicting impulses to attack and to escape and is commonly shown most intensely to potential nest predators. A very great number of birds and mammals have an homologous and similar display. Later observations confirm Darwin’s statement when discussing this behaviour (Darwin, 1872): “These appendages (i.e. fur or feathers) are erected under the excitement of anger or terror; more especially when these emotions are combined . . . the action serves to make the animal appear larger or more frightful.”

The components of this display are easily analysed. The erection of the feathers apparently indicates a conflict situation in which the greater the conflict the greater the erection of the plumage. The drawn-in position of the head and its frequent orientation towards the alarming object are preparations for attack or active defence. The lifting of the wing may serve mechanically to help keep balance if the bird strikes out with the nearer wing. It is caused, however, by

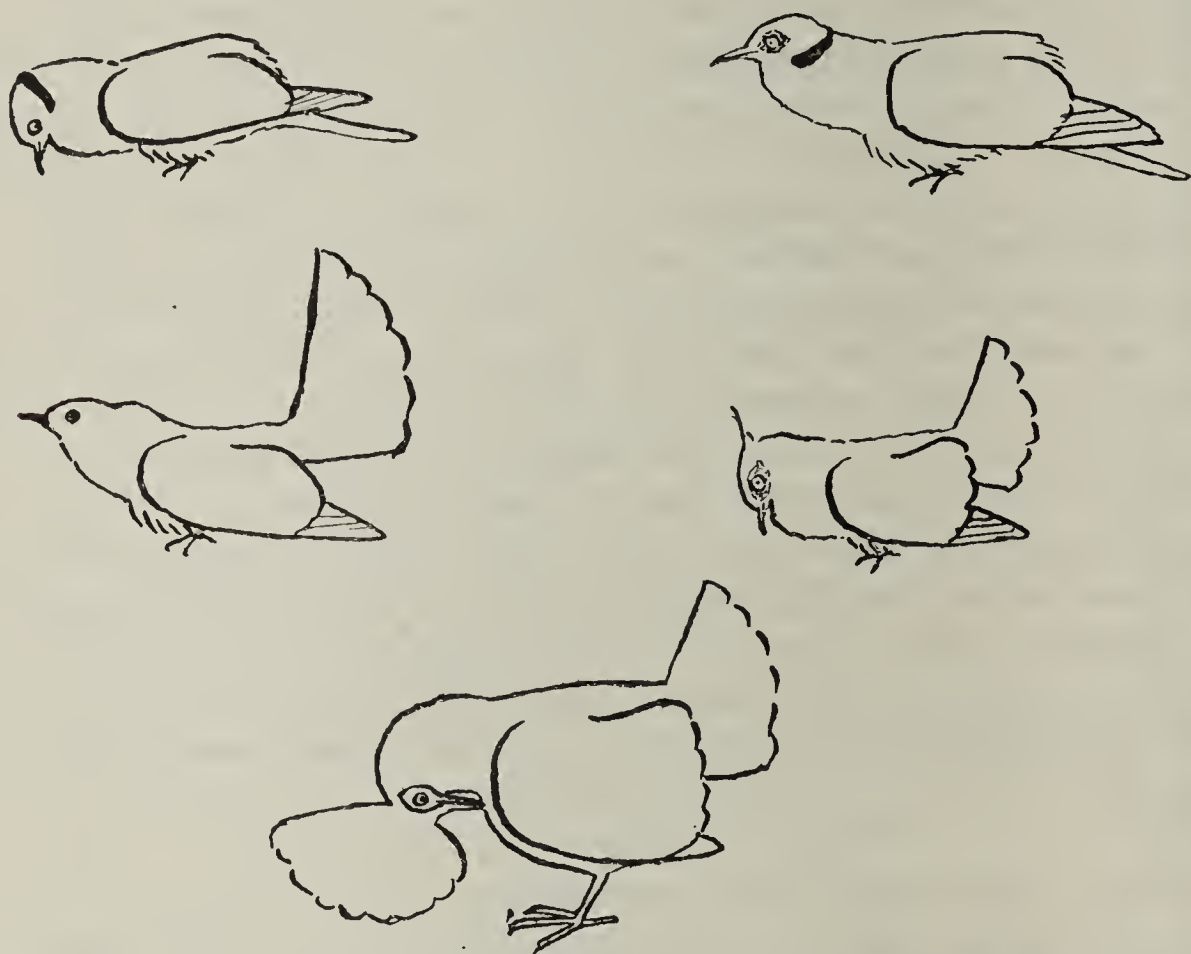
the impulse to flee. Should this tendency increase, both wings will be lifted. Then a slight increase of the frightening stimuli and the bird will "lose its nerve" and leap into the air with a quick downward stroke of its wings.

From the time they are about half-feathered, nestling pigeons react to the appearance of a frightening object with a very similar display. They rear themselves up, erect the feathers, especially on the neck, inflate and deflate their necks (though not to the same degree as an adult when cooing) snap their bills, and may peck or strike at the intruder. Young able—or nearly able—to fly, will flee from the nest under such circumstances, although they may give this display if they are cornered in a cage or in a nest-cavity. Because under such conditions adults would flee, an exactly similar display to that of the young is seldom shown by them. Under certain circumstances they may, however, behave exactly as do nestlings. When I was training my Red-eyed Doves to roost in the shelter it was necessary to put them therein each night. To avoid handling them I endeavoured to do this by lifting each under the breast so that it perched on the hand and allowed itself to be carried. The birds were nervous and would sometimes panic and fly wildly into the darkness, but frequently it was possible to carry the bird in this manner. Often in such cases, however, it showed its fear in "infantile" manner by erecting its feathers, inflating and deflating its neck with quick gasping puffs and snapping its bill. An adult Stock-Dove with an injured wing was brought to me. Although unbroken, one wing seemed incapable of movement, and presumably any attempt to move it caused pain. If I approached when it was on the ground the bird would run quickly away, but if on a perch it performed the "nestling's" defensive display. It did this also when carried on the hand, particularly if lifted close to my face. This lasted only a few days. As soon as the wing began to heal it ceased to behave thus, but would flutter down off its perch if approached and would no longer permit itself to be lifted on the hand.

The difference in motivation between the defensive-threat display of free, uninjured adults, and that of nestlings (or of adults under such conditions as described above) seems to be that in the first the birds' aggressive impulses are conflicting with the impulse to flee. In the second it is incapable of escaping either through physical incapacity or through *fear* of something else (e.g. taking wing in the dark, the pain of using an injured wing) conflicting with fear of the object. The factor common to both cases is the inhibition of a very strong tendency to flee. The similarity in the movements and behaviour shown, suggest that this situation arouses a similar emotional mood in the bird whether the inhibiting factor is an overt force or its own aggressive tendencies.

THE BOWING-DISPLAY

This is common to many species of pigeons, perhaps to all. In it the bird, facing the object of its display, lowers its head, at the same time exhibiting its display-plumage frontally, and often uttering a characteristic cooing call. At the lowest point of each bow the bird's bill may be at right angles to the ground (e.g. Barbary Dove, Rock-Pigeon)



Bowing-displays (position at lowest point of the bow) of Barbary Dove, Red-eyed Dove, Bar-shouldered Dove, Plumed Ground Dove, and Common Crowned Pigeon.

or at any angle between that and a slight upward one as in the Bar-shouldered Dove (*Geopelia humeralis*). In all the species of *Columba* and *Streptopelia* whose bowing is known to me there is marked inflation of the neck and/or erection of neck feathers, serving to show the display plumage (see sketch). The Crested Pigeon (*Ocyphaps lophotes*) and the Common Bronze-wing (*Phaps chalcoptera*) show no marked inflation of the neck or erection of its feathers but slightly open their wings and present them frontally so that the brilliant display-plumage, which in these species is on the wings and not on the neck, flashes into view. To appreciate the bowing-display fully it must be seen from the front and at "pigeon's eye level". Then even the black bill, white cere, and orange eyes, set against a shining globe of vivid green and purple, that a Domestic Pigeon (of the wild colour) presents is striking and almost awe-inspiring.

The bowing-display of the Common Crowned Pigeon (*Goura*

cristata) differs from that of other pigeons known to me in being lateral rather than frontal. Also at the culmination of the bow the head is completely upside down (see sketch). The bird spreads and erects its tail and half opens its wings, utters a very deep, short "Ööhmp-ööhmp" and bows its head quickly forward and round to the inverted position. The spread tail is slightly tilted to one side towards the object of the display and the inverted head is, at least sometimes, also slightly tilted so as to present it to best advantage. The display is thus essentially the same as that of the Australian Bronzewings except in its lateral orientation which is correlated with the laterally flattened crest rather than the wing and tail markings, being the major feature. As I have only seen this display about a dozen times, and from the same captive specimen (not in my possession), the possibility that it may, at high intensity, be frontal like that of other pigeons cannot be entirely excluded. I think this is unlikely, however, for two reasons. Firstly the crest can hardly be shown to advantage in a frontal display, and secondly the display I watched seemed very fervent and the displaying bird displacement-preened behind its wing after each bow, thus suggesting that the full sexual display had been given. It is interesting that in the different species of *Goura* crest development is in inverse relation to the brightness of the wing patch. Doubtless the others have a similar bowing-display to that of *G. cristata*.

Although the bowing-displays of the different species are now of a stereotyped nature most of their components seem to have been derived from locomotory or intention movements. The crouching posture assumed at the culmination of each bow, as has been pointed out elsewhere (Daanje, 1950), probably originated in the preparatory movement for jumping or flying up or forward. In some species, such as the Bar-shouldered Dove, the posture adopted makes this fairly obvious. In most the position of the head destroys this impression and perhaps indicates a more complete ritualization of this part of the display. Inflation of the neck seems a necessary concomitant of cooing, and, together with the erection of the neck feathers, often also serves to exhibit the display-plumage. We have seen, however, that neck inflation (to a lesser degree) and erection of the neck plumage is shown by young, and sometimes also adult pigeons, when the impulse to escape is thwarted. It seems likely, therefore, that these elements of the bowing-display originated in, and may still indicate, a conflict situation in which aggressive or sexual impulses inhibit an impulse to escape.

Spreading of the tail occurs during the bowing display in *Geopelia*, *Leucosarcia*, *Lophophaps*, *Ocyphaps*, *Goura*, and some species of *Columba*. In the first two genera the chief display markings are on the tail, which is exhibited as an erect fan at the culmination of the bow. In the

Wood-Pigeon and Stock-Dove (see sketch) the tail is spread during its upward movement but usually closes again prior to its maximum erection. In *C. livia* the spread tail is depressed, and so is hardly visible to the bird displayed at. The Snow-Pigeon (*Columba leuconota*) raises but does not spread its strikingly marked tail when bowing (Newman, 1911). The Speckled Pigeon spreads and depresses its tail in a similar manner to *C. livia* but to a lesser degree. No spreading of the tail occurs in any of the *Streptopelia* species whose bowing-display is known to me (*S. senegalensis*, *chinensis*, *decaocoto*, *orisoria*, *semitorquata*, and *turtur*). Since that acute observer, Newman, does not record it for *S. picturata* and *S. decipiens* (Newman, 1908 and 1909) it is safe to assume it does not occur in these either.

The lifting and frontal presentation of the wings, such as is shown by the Crested Pigeon, Common Bronzewing, and Plumed Ground-Doves *Lophophaps* sp. is undoubtedly derived from the intention-movement of taking flight. Whether directly as in the wing-lifting of some *Columba* species (which do not show this movement in their bowing displays) or secondarily via the wing-movements of the begging juvenile could perhaps be determined by further study of the various "Bronzewings".

Spreading and erection of the tail—which are often combined—appear likely to have derived from movements shown when alighting, or checking in flight. Many pigeons and other birds usually throw up the tail when they alight. In the Wood-Pigeon this movement, even in "everyday" life, has evolved to the point where it appears to have a psychological rather than a physiological significance. Instead of throwing up the tail at the moment of alighting as do, for example, the Crested Pigeon and the Blackbird *Turdus merula*, the Wood-Pigeon does so a few seconds after. This it appears to do when sufficiently at ease to have "decided" to remain—at least for the moment—where it is. If alarmed or sexually excited at the moment of alighting the Wood-Pigeon often remains perched for a considerable period without making this tail movement. In the bowing-display raising of the tail is correlated with a cessation of movement towards the object. Thus the movement still retains something of its (presumed) original significance.

Spreading of the tail is connected with a tendency to escape from, or at least avoid closer contact with the object. This is evident in *C. livia*. In this species the spreading of the tail in no way enhances the display's optical effect, but is shown especially at the moments of closest approach. It is almost certain that spreading of the tail has its origin in escaping impulses. Probably such a tendency to escape is still always felt by the bird at the times when it spreads or raises its tail. (Of course I am not suggesting that such a tendency to escape is accompanied by a mood anything like that evoked by a

predator. The subjective feelings accompanying such escaping tendencies are doubtless more akin to those of ours which we call by such terms as "diffidence", "modesty", "bashfulness", and so forth than to true fear.) In many wading birds (Simmons, 1955) spreading of the tail occurs in displays evoked by conflicting impulses to flee and to attack.

A high lifting of the feet, often with a "marking time" effect accompanies the bowing-display of many species (Whitman, 1919). In *Columba* and *Streptopelia*, probably also in others, these are intention-movements of mounting. This is clearly shown when the displaying bird carries straight over from the bowing-display to copulation without interposing the mating ceremony. Consideration of the bowing-display of some species in more detail will serve to substantiate the above remarks. It is, of course, necessary to schematize slightly and it must be borne in mind that many minor variations can, and often do, occur, depending on the condition and personality of the displaying bird and the reactions of the object of its attentions.

C. livia

In this species the bowing-display has three distinct, but intergrading forms. These might conveniently be termed the sexual, self-assertive, and defensive. These terms are rather arbitrary and must not be deemed exclusive; self-assertiveness is certainly present in the "sexual" and "defensive" forms of the display, and a state of sexual activity is a prerequisite for the self-assertive form.

In the sexual version the male flies in display-flight towards the object, alights near it and runs or leaps towards it, cooing loudly with inflated neck and feathers of neck, rump, lower back and (usually) belly erected. On reaching it he lifts his head high, but with bill still pointed somewhat downwards. Then he turns in a quick circle, bowing low and cooing, then again lifts his head and turns away. Quick nodding head movements are shown during momentary pauses in the display movements. If the bird displayed to moves away he flies, runs, or jumps towards it again. If it remains still, so that he is displaying on the same spot, the spreading and depressing of the tail are usually correlated with the upward movement of the head. If the other bird does not give a positive sexual response the displaying bird is likely to attack it if they are in or near his territory or to lose interest if they are on some neutral ground. He may try to initiate the mating ceremony and/or to copulate and will almost invariably do so if the object of his display invites such behaviour. A female that is eager to pair may respond to the bowing display with attempts to initiate the mating ceremony even before the male begins to open his bill or displacement-preen. If she is very eager to mate she will crouch and invite coition as soon as the male begins to display.

This form of the bowing-display is given by a male in reproductive condition to known females other than his mate, and of course by unpaired males, in whom alone it serves a biologically useful function by indicating their readiness to mate and nest to an unpaired female, to strange birds of either sex and more rarely to other males known to him. He often gives it to his own mate, but usually very briefly and not intensely, as a prelude to an attempt to initiate the mating ceremony. If his mate is removed (by human agency) for some hours or days he will usually display at very full intensity to her when they are put together again. It appears that a certain specific state of excitement (which seems to occur when sexual, self-assertive, and escaping impulses are simultaneously aroused) is needed to elicit the full intensity bowing-display and that such a condition is not very often evoked by the bird's own mate. Other vertebrates show comparable behaviour. The female does not often show this form of the bowing-display. Exceptionally she may display in this manner to her own mate immediately after both have been giving the self assertive form in reference to neighbours who have aroused their anger. Here one has the impression that the female is very strongly inclined to attack and only "respect" for her mate prevents her from pecking him. This suggests that the postures adopted are primarily caused by thwarted aggressive and escaping impulses and are linked with strong sexual impulses because it is normally only when these are present that attacking and/or fleeing tendencies can be so strongly aroused and yet held in check. Very similar posturing is used by the hen pigeon when joining her nest-calling mate on the nest-site as has been pointed out by the Heinroths (1949) and Levi (1940). Here again the spreading and depressing of the female's tail seem to indicate a thwarted impulse to escape. That aggressive tendencies are also present is shown by the fact that, as she jumps or runs up to her mate she often pecks him quite roughly (the displaying male may also peck at the female as he reaches her before or instead of turning away) and if she does not she caresses him, which is a sublimated form of aggressiveness (see Goodwin, 1956).

In the "self-assertive" form of the bowing-display the bird turns round and round, cooing, with lowered head but shows little or no lifting of the head—except in between bouts of cooing and turning—or spreading of the tail. This display may "die away" or lead on into the intense sexual form or into fighting or advertisement-cooing. It is given by a male in reproductive condition under the following circumstances: Immediately after alighting in or near his territory or in some often frequented area where he feels self-assured. When (being in such an area) he sees another pigeon—particularly a stranger or a known male whom he dislikes—approaching. A male returning home (after having been away for some little time) or revisiting a

former home, often displays in this manner on alighting even if no other pigeons are in sight. I must, however, make the reservation that on the occasions that I have seen this the birds concerned were same specimens and the possibility that their display had reference to me cannot be entirely excluded. In no other circumstances have I seen this display given by a bird completely alone.

This form of the bowing-display seems to be primarily self-assertive. The German terms "Imponiergehabe" and "Prahlgelasse" are apt but it is misleading to translate them (as is often done) as "threat display" or "aggressive display". True the displaying bird is in a condition where it will usually attack "at the least provocation" but it is, as a rule, equally ready to show non-aggressive forms of sexual behaviour. The turning round and round might perhaps have derived from alternating impulses to flee and to attack. But it now appears to have become quite ritualized and "automatic". It is equally possible, however, that this circular movement may be primarily functional, being the most efficient method of presentation for a colonial or semi-colonial species in which the displaying individual is likely to have potential rivals or mates on either side of it.

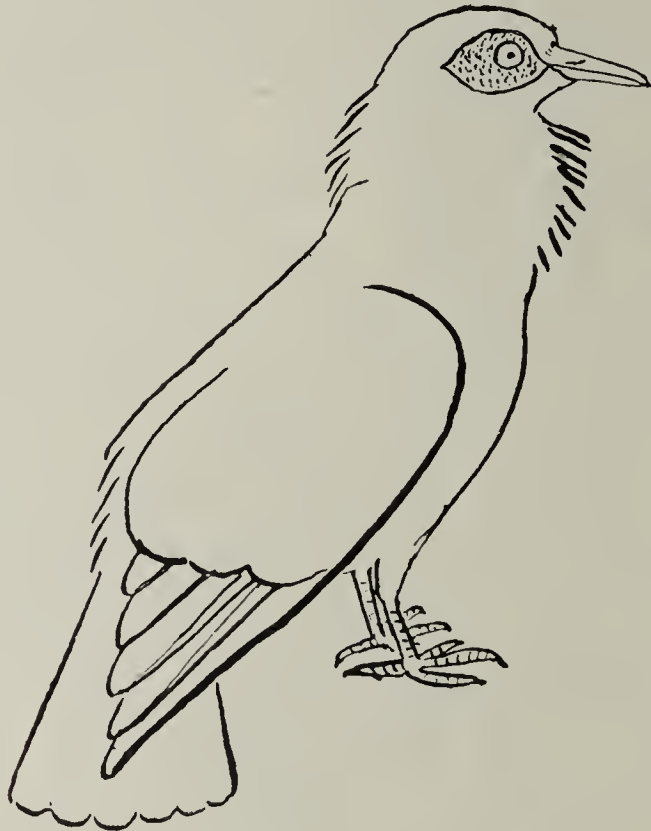
The third, or defensive form of this display consists merely in lowering the head in the bowing position and uttering the self-assertive "Öö-röö-cöö-t'cōō!" Normally the bird so doing faces its enemy, but may turn partly from it. This display is shown as a prelude to attack or in defiance, and is not restricted to birds in reproductive condition.

The female uses the self-assertive and defensive forms of the bowing-display, but seldom except when at her own perch or nest-site. In the self-assertive version she seldom moves round in a complete circle, as the male usually does, but makes a partial turn and then back again through the same arc.

The Speckled Pigeon

In its most intense sexual form the bowing-display of this species is very similar to (and doubtless homologous with) the corresponding display of *C. livia*. The tail is not, however, often spread so fully or depressed to the same extent. At the close of each cooing phrase, as it lifts its head, the bird makes quick jerking movements of its head to either side. These movements are so rapid that it is difficult to follow them in detail. They seem to have a lateral as well as a forward component and may perhaps be a combination of intention-movements of mounting and of turning away. Immediately after lifting its head the bird often turns half round away from the object of its display and may make a complete circle like *C. livia* although more often it turns back through the same arc as does the female of *C. livia* in the self-assertive form of bowing-display.

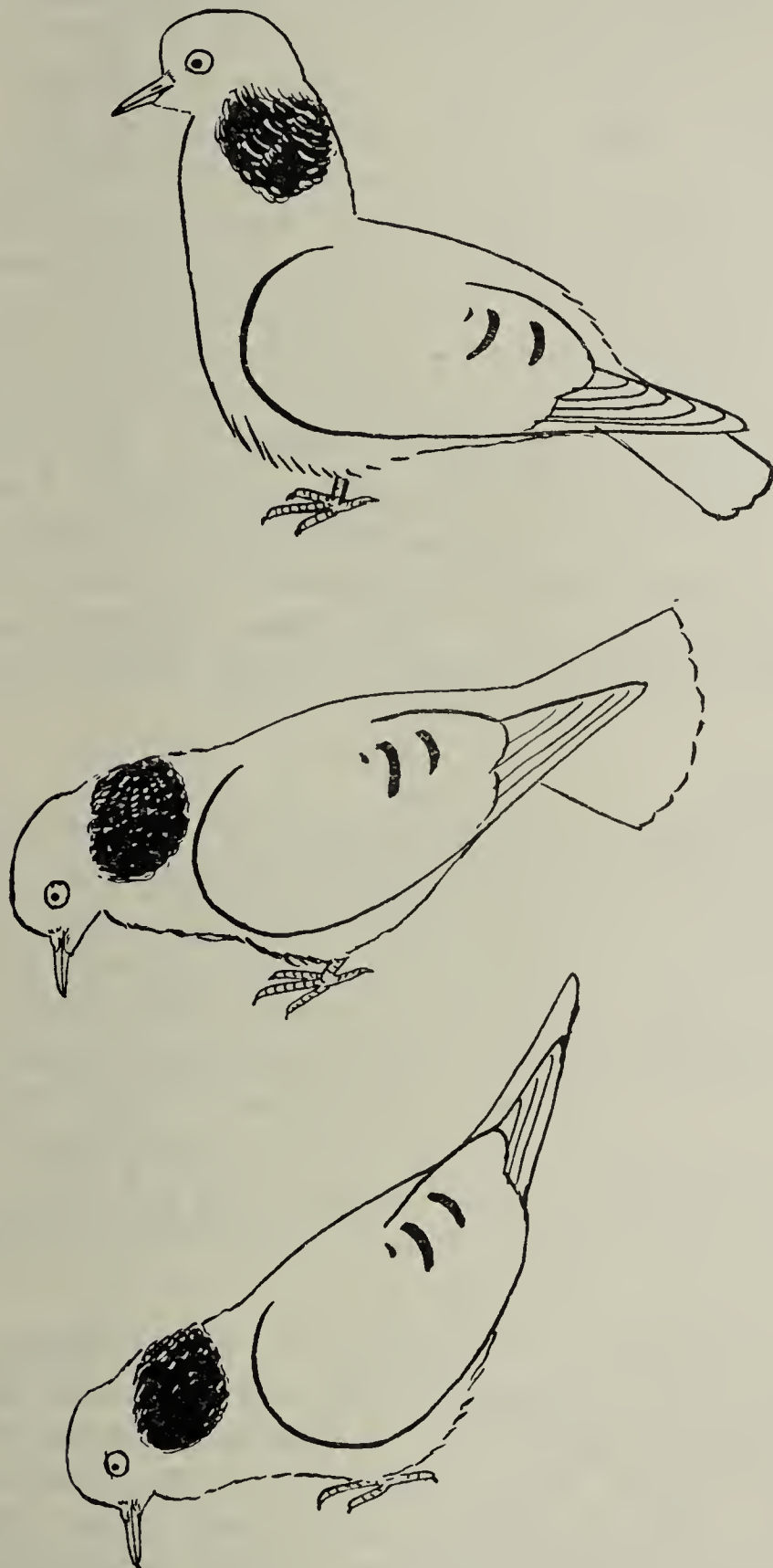
In the versions that correspond to the self-assertive and defensive forms of this display in *C. livia*, there is little or (more often) no spreading of the tail and the bird faces its potential adversary and does not turn round and round. It may, however, if there are others to both sides of it, give one cooing phrase and then turn round quickly



Speckled Pigeon : Highest and lowest positions in the bowing-display (see text) to bow and coo towards another individual. So far as I have seen this display is always directed at a particular bird or birds, whereas in *C. livia*, although usually evoked by the sight of a particular individual, the circling and cooing often seems directed at "all whom it may concern". Defensive or threatening versions of this display are, as in *C. livia*, not confined to birds in reproductive condition. The female Speckled Pigeon, who is quite as aggressive and quarrelsome as her mate, if not indeed more so, uses the self-assertive and threatening forms of the bowing-display as freely as the male. She spreads and depresses her tail in the same manner as *C. livia* when joining the male on the nest-site.

The Stock-Dove

In this, as in all the species to be mentioned hereafter, the bowing-display appears only to be used by birds in (or near) reproductive condition. In the most intense version the male walks towards the female with tail partly spread and somewhat depressed. On nearing



Bowing-display of the Stock-Dove (for explanation see text).

er he bows low, raising his tail to an angle of about 80 degrees as he does so. The tail is spread as it lifts but normally closes before reaching its highest elevation. A second or third bow may follow the first, and

before each the male raises his head with neck feathers erected (see sketch) in much the same posture as *C. livia*. He does not, however, turn around or away from the female. In less intense forms the tail may be only slightly raised and the bow not be preceded or followed by the erect posture. If the position of their perches hinders a frontal presentation, or the bird is inclined to withdraw from a fight, the display may be given sideways on, but with a slight orientation of head and body towards the object evoking it. Another Stock-Dove alighting near will often evoke a self-assertive bow from a territory-owner and this bow may be unorientated. The stimuli eliciting the bowing are the same as those already given for *C. livia* but in the Stock-Dove one has the impression that self-assertiveness and threat are always dominant over any escaping tendencies that may be present in the displaying bird. Even in the intense versions the male Stock-Dove does not turn away from the female, but frequently follows up the display by pecking or striking her. The bowing-display elicits a sexual response in the female (parading) but I have not seen it stimulate her to invite coition immediately. Probably it would, however, do so under parallel circumstances to those evoking such a response in domestic *C. livia*. The female uses the bowing-display under the same situations as does the female *C. livia*, but rather less freely.

The Wood-Pigeon

The bowing-display is almost identical with that of the Stock-Dove, but the male will more often go into the bowing posture and utter the display coo without raising his tail if walking after a moving bird he wants to display to. At such times—as also during purely aggressive encounters—he frequently leaps towards the other bird. He does not spread and depress his tail when approaching another bird. His display seems to have the same significance as the Stock-Dove's, but rather more frequently leads directly to billing and copulation. I have not seen a known female give this display, but as I have not kept tame breeding pairs of this species, this is no proof that she does not do so.

THE DOVES OF THE GENUS *Streptopelia*

The bowing-displays of the Barbary and Collared Doves (see Goodwin, 1952, and Hofstetter, 1954) are identical, although their voices (q.v.) differ in sound. The bird alternately bows low and draws itself up to full height. At the lowest point of the bow the black collar is visible from in front, framing the lowered head. The tail is not spread, lowered, or raised, though it moves a little in time with the body movements. In the Red-eyed Dove the bows are quicker and shallower and at the culmination of each the head is horizontal or nearly so. From the front one can see only the lateral portions of the black collar, but these, and the pale blue-grey forehead, are very

conspicuous. It is probably no coincidence that in this species the median area of the black collar is narrower and often obsolescent. In the Turtle-Dove the tempo of the display is very quick, the bows are rapid and bobbing and the erected display plumage forms a black and silver ruff on either side of the head. In the Spotted Dove the bows are slower than in the Turtle-Dove, but not quite so (relatively) slow and deliberate as in the Barbary and Collared Doves, and the display plumage forms a broad collar framing the head. In its close relative the Laughing Dove the bows are shallower and the head kept more nearly horizontal, in correlation with which we find the display plumage on this species is on the *front* and sides of the neck.

In these (? and all other *Streptopelia* species) the bowing-display is primarily sexual. In the Barbary, Collared, and Turtle-Doves (probably also in the other species too) receptive females often respond by inviting coition without bothering about further ceremony. Any response other than an appropriate sexual one usually causes the displaying bird to attack. When it does so, however, it invariably ceases to bow and coo, goes into its aggressive posture with lowered head, and (Spotted and Laughing Doves excepted) utters its excitement cry. These doves never bow and coo at one another "between rounds" when fighting, as the European species of *Columba* and the Speckled Pigeon commonly do. Although it is, especially in territorial situations, so frequently followed by attacking, there are, I think, no grounds for supposing that a *Streptopelia* feels aggressive when it gives its bowing display. It appears rather that it only becomes angry when, *and because*, its sexual impulses are thwarted by an inappropriate response. We know from both observation and introspection that in Man a change of subjective mood to one of anger may often be instantly evoked when any impulse is thwarted, particularly if such impulse had a strong instinctive basis. In this respect birds and Man appear to have much in common.

The lack of any exhibition of the tail (in this particular display) by the *Streptopelia* species is additional evidence that such spreading and/or erection of the tail is in fact indicative of a tendency to escape or at least avoid closer contact with, the object evoking the display. Conversely the lack of such a movement in these doves confirms the opinion, based also on other observations, that little, if any tendency to escape or to attack, is present when they give the bowing-display. It might be added that the *Streptopelia* species usually throw the tail up when they alight, they exaggerate this movement if they are sexually or aggressively excited, and they have boldly patterned outer tail feathers which are spread and exhibited during display-flight. Their non-use of the tail when bowing cannot therefore be due to lack of "raw material" for selection and incorporation into this display.

(*To be continued*)

BREEDING ABYSSINIAN LOVEBIRDS

By MATHEW MITCHELL (Edinburgh, Scotland)

During the winter of 1953 I obtained a pair of Abyssinian Lovebirds from Mr. Salteri.

From the start this pair was very docile, displaying none of the usual timidity of the majority of lovebirds.

In April of the following year they began to take an interest in their nest-box. I then provided them with suitable twigs which they proceeded to strip. After a time the activities of the hen ceased, and for long periods she was not seen. By that I guessed she might be incubating, perhaps it would be more truthful to say I hoped. I had previously read in various books that Abyssinians were not at all free-breeders, being somewhat shy by nature. Consequently I resisted the temptation to look, in spite of the fact that they were not the least bit shy, indeed they were almost parrot-like in their docility. By June I knew that there were young, as I could hear faint cheeping sounds coming from their enclosure. By August three sturdy youngsters emerged which subsequently turned out to be two hens and one cock. On examining the nest-box I found one egg which contained a dead chick. I cleaned out the nest-box and put it back in position, but no further attempt was made at nesting that year.

I should at this point try to give a rough idea of the construction of the aviary; the overall dimensions are 8 ft. 6 in. long, 6 ft. 6 in. high, by 6 ft. 6 in. wide; this is divided into three compartments of equal size, a third of the dimensions of each of these flights being built of wood to afford shelter; in the other two compartments are Fischer's and Masked Lovebirds.

This year the Abyssinians began nesting operations at an early date, by the end of February they were once more building, and by the end of April two more young appeared, this time both hens. Again, as last year, four eggs were laid; of the remaining two eggs one contained a dead chick, the other was infertile. As in the previous year no further attempt was made at nesting despite the fact that the summer was still ahead. Can it be that this species is single brooded? Also this season the pair nested outside in the wire enclosure, but both Fischer's and Masked nested in the enclosed part of the aviary.

Apart from the usual seed mixture and seeding grasses they were also fond of apple. One day there were a few canned figs in syrup left over from lunch, these I gave to the Abyssinians thinking that since they took apple readily they might also like figs. I was not long left in doubt, both fell to with great gusto and have ever since evinced a partiality to this fruit.

* * *

LONDON ZOO NOTES

By J. J. YEALLAND

The death during the autumn of the Blue-billed Malimbus, brought from British Cameroon in 1948 by Mr. Webb, brings to mind a curious error in the Centenary Edition (1929) of the Society's *List of Vertebrated Animals*. In this edition the Combasou, which must by then have been exhibited many times, was omitted and *Malimbus nitens* was included. This, as pointed out by the late Dr. Hopkinson in the AVICULTURAL MAGAZINE (1932, p. 291) had then "probably never been kept in captivity even in its own country, except perhaps for a day or two by Mr. Bates' native catchers". He attributed the confusion to the specific name *nitens*, formerly given to the Combasou. Knowing from experience how very difficult it is to establish newly caught specimens of the Blue-billed Malimbus, I would have no hesitation in believing Mr. Webb's bird to be the first ever exhibited in Regent's Park.

Dr. G. R. Walker says that "These Weavers rout out insects from among the leaves", but, like a number of other birds, they also eat the oily husk of palm nuts and are caught by natives in snares baited with these nuts. I was brought several and there was never any difficulty in getting them to feed on grasshoppers, the large fat larvae of the palm weevil, termites, palm nut husk and fruit, but in spite of eating quantities of these foods all became thin and none lived for more than about a fortnight. The birds have powerful bills, so could no doubt eat large beetles, cicadas, and perhaps even small tree-frogs. The sexes are alike in plumage and the red throat feathers of Mr. Webb's bird did not fade appreciably during the seven years that it was in the Bird House. Bannerman calls this Malimbus "Gray's Blue-billed Weaver": it is widely distributed over the forests of West Africa.

Of the arrivals, four are species new to the collection:—

Yellow-billed Oxpecker (*Buphagus africanus*). Three of these curious birds, the first of the Oxpeckers to be exhibited in the Gardens, were collected in Uganda by Mr. and Mrs. Bloom. There are two forms of the Yellow-billed, which actually has a bright glossy red and yellow bill, and two of the Red-billed. They are also known as Tick-birds or Rhinoceros-birds and are widely distributed over tropical and sub-tropical Africa in fairly open country frequented by the larger wild and domesticated mammals.

Ruwenzori Hill-babbler (*Pseudoalcippe atriceps*). This bird was also collected by Mr. and Mrs. Bloom in the mountainous district of south-western Uganda. It also occurs in the Kivu district and the hills and mountains of eastern Cameroon.

Golden-crowned Sparrow (*Zonotrichia coronata*). Three specimens of this pretty North American "sparrow" were presented by Mr. A. E. Sibley, together with a Gambell's Sparrow (*Z. gambelli*), a Fox Sparrow (*Passerella iliaca*), one of the forms of the African Grey-headed Sparrow (*Passer griseus*), a pair of Redstarts, and a pair of Greenland Wheatears.

Large Olive Bulbul (*Pycnonotus plumosus*). A specimen of this Bulbul was presented by Sqdr. Ldr. K. C. Searle who also gave two Japanese Red-flanked White-eyes (*Zosterops erythropleura*), a Melodious Jay-thrush (*Trochalopteron canorus*), a Chinese Blue Pie (*Urocissa melanocephala*), another Long-tailed Parrakeet and a pair of Nicobar Parrakeets.

A Falcated Teal has been presented by the Leckford Estate, Ltd., and a tame hen Large Minivet (*Pericrocotus speciosus*) by Capt. R. S. de Q. Quincey.

A brightly coloured specimen of the Red-throated Parrot (*Amazona collaria*) and a Shag that was picked up in Hertfordshire after some rough weather have also been presented.

A young pair of Great Bustards (*Otis tarda*), an Egyptian Vulture, and two Egyptian Plovers, or Crocodile-birds, have been received in exchange.

The Crocodile-birds were formerly said to enter the mouths of crocodiles to feed on leeches and to pick particles of food from the reptiles' teeth, but modern observers say this is not so and one wonders whether the birds ever did undertake these dangerous excursions or whether the habit has been changed.

Mrs. C. M. Everitt's gift of thirty Budgerigars and the purchase of a number of the Woburn "homing" strain bring the aviary population to just over a hundred, which seems about the right number.

The Rail brought from British Guiana is now identified as *Neocrex erythrops olivascens*, the Venezuelan Red-faced Crake—an inappropriate name since it is only the proximal half of the bill that is red. The two Song Sparrows received as Pileated prove to be McConnell's Song Sparrow (*Zonotrichia macconnelli*).

BRITISH AVICULTURISTS' CLUB

The fiftieth meeting of the Club was held at the Rembrandt Hotel, Thurloe Place, South Kensington, S.W. 7, on Wednesday, 11th January, 1956, following a dinner at 7 p.m.

Chairman : Miss P. Barclay-Smith.

Members of the Club : Mrs. J. R. Alderson, P. C. Bath, Miss K. Bonner, Mrs. V. M. Bourne, W. D. Cummings, A. H. D'Aeth, Mrs. H. Denny, Miss D. Gask, A. V. Griffiths, H. J. Harman, Miss S. I. Hobday, Miss M. H. Knobel-Harman, F. Mosford, G. S. Mottershead, S. Murray, Sir Crawford McCullagh, Bart., A. A. Prestwich, D. M. Reid-Henry, D. H. S. Risdon, T. Spence, P. Sutton, E. N. T. Vane, N. S. Walker, D. Young.

Guests : Dr. K. Aylwin-Gibson, J. Bailey, R. W. Barclay-Smith, M. W. Bradshaw, S. A. Croucher, Mrs. S. A. Croucher, Colonel H. B. Finch, Mrs. R. Frayne, M. Frost, Miss E. G. Ganner, Miss H. Gentry, Mrs. A. V. Griffiths, Miss M. Hagan, Miss B. Henderson, Miss A. Hounslow, R. Jenner, Mrs. R. Jenner, Dr. S. B. Kendall, Mrs. S. Murray, Mrs. P. Nealon, P. G. Paris, H. Stubbs, Mrs. P. Sutton, Mrs. W. Watmough, Mrs. D. Young, A. N. Other.

Members of the Club : 25 ; guests, 26 ; total, 51.

David Reid-Henry gave a talk entitled "Hawking as a Recreation". He commenced with a brief hypothetical account of a possible origin of the practice of falconry—the true origin is virtually unknown. He then demonstrated the furniture used, explained the uses of the various types and showed that modern practice is still very similar to that of the falconers of old. This, in spite of the fact that falconry to-day is, in the western world at least, very much a field-sport ; whereas in times past it was one of the best means of supplementing thearder and, consequently, was carried out as a serious matter of necessity.

Tracing the history of the sport in Great Britain Reid-Henry explained why there had been such a decline in popularity. He was, however, happy to report a considerable revival of interest in recent years.

A lengthy discussion followed in which Mrs. Watmough, Mrs. Frayne, Colonel Finch, Mr. Spence, Mr. Vane, and others took part.

But few of the audience had had any experience of falconry and Reid-Henry's discourse proved both very interesting and entertaining. In addition, his Buzzard "Charles Bump" and Peregrine "Dora" caused something of a sensation. Altogether a very enjoyable meeting.

The next meeting of the Club is on **14th March**.

ARTHUR A. PRESTWICH,
Hon. Secretary.

* * *

NEWS AND VIEWS

R. S. Dharmakumarsinhji has been appointed stipendiary Wild Life Preservation Officer by the Government of Bombay. This is the first such appointment by any State in the Indian Union.

* * *

Major A. N. Weinman, the Director of the Zoological Gardens of Ceylon, has been seconded to the Government of India to plan and organize a new National Zoological Park at New Delhi.

* * *

Mr. E. R. W. Lincoln, Editor of *Cage Birds* since 1923, retired on 30th November, 1955, at the age of 67 years. Mr. Lincoln is succeeded as Editor by Mr. W. J. Page who has been associated with *Cage Birds* since 1927.

* * *

L. Raymaekers, Brussels, reports his breeding results for 1955. One lutino Indian Ring-neck, 1 Many-coloured, 4 Yellow-bellied, 5 Rosellas, 2 Princess of Wales', 13 Bourkes, 13 Splendids, and 9 silver Diamond Doves. A very successful season.

* * *

G. A. Coleman's young Lazuli Bunting mentioned in *A.M.*, 1955 263, was most unfortunately killed by a cat. All three eggs in a second clutch hatched. The three young ones left the nest on 18th July and were successfully reared.

* * *

P. C. Bath's two young Blue-and-Yellow Macaws were successfully reared. This is not a first breeding for Great Britain—Edinburgh Zoo were successful in 1939—but it is a first success, and a very meritorious one, by a private aviculturist.

* * *

Sir Crawford McCullagh, Bart., Belfast, enjoyed a record breeding season, 1955, with the following 71 birds fully reared: 4 Indian Ring-necks, one a lutino; 2 Princess of Wales', 3 Barraband's, 3 Rock Pebbles; 6 Fischer's, 4 Peach-faced and 4 Nyasa Lovebirds; 6 Barnard's, 6 Bauer's (4 in first nest, 2 in second), 3 Stanley, 15 Red rumps, 7 Splendids, 7 Bourkes, 1 Elegant.

* * *

R. G. Kirkham, Dublin, reports: "My Forsten's Lorikeets went to nest in an indoor flight at the beginning of October. Only one egg was laid but it was fertile and the youngster duly hatched. It was quite naked but after about ten days became covered with a silk

white down which almost looked like hair. I had great hopes that it would develop and live but the parents stopped feeding. I eventually discovered it thrown out on to the floor, dead."

* * *

Lovebird mutations. A number of so-called yellow and white Masked have recently been for sale in Holland. A correspondent writes that the yellow was so mottled with green and the white with blue that they looked like very poor specimens of ordinary green and blue. My correspondent adds that the birds, of Japanese origin, appeared to be lacking stamina and were altogether most unattractive. Lutino and split-lutino Nyasas were also on offer.

A breeder in South Africa has been advertising, perhaps somewhat optimistically, two true pairs of "Buttercup Yellow Peachfaced" at £250 per pair.

* * *

W. R. Carthew, Vereeniging, South Africa, writes: "My Eagle-Owls raised two chicks for just on two weeks when they were found dead, in perfect condition and for no apparent cause. I am hoping the hen will do better next time. This was her first clutch. She was just a bundle of fluff when I secured her from a native for half-a-crown just year ago.

The three Jendaya \times Black-headed Conures are all now in full plumage. The Black-headed predominates throughout with exception of yellowish breasts and touches of orange on heads. They appear to be a male and two females.

Another interesting hybrid is that of a Peace Dove hen crossed with Chocolate Tumbler Pigeon. It is a really lovely bird with the Dove predominating."

* * *

Tom Spence sends news of his Purple-capped Lories. He writes: I feel sure you will share my disappointment when I say that the young one died without any real warning when eight months old. The parents laid clutch after clutch all spring and early summer, only to slay the young when about three weeks old. Tragedy heaped on tragedy, for about three days before the last clutch was due to hatch the hen broke her leg through an overgrown nail catching in the wire. It was really a frightening mess, for the limb was twisted round and round and I was in miserable despair about it. However, she was the world's best patient and after I strapped her up as best I could (and this was difficult for it was high up the tibia-tarsus that was broken) she sat unmoving in a little box-cage for four weeks till it was quite healed. When she tired of sitting on the sound limb she would hold it with her bill and never once got into trouble. Separation from her

mate brought back all her former affection for me so that during her grass-widowhood we got on famously. Although the leg has healed without any shortening or deformity, she has not yet bred since being restored to her mate."

* * *

Round the Zoos.

Rotterdam.—Arrivals, one Great Bird of Paradise, one Wilson's Bird of Paradise, one Quetzal, and three Cassowaries.

Wassenaar Zoo.—A notable achievement has been the breeding of the Red-billed Hornbill, *Lophoceros erythrorhynchus*. Three young, fully independent, left the nest on 11th, 15th, and 17th July, 1955. The first to leave was killed by its mother on the 15th. The remaining two were removed as soon as possible after leaving the nest, and are reported to be flourishing.

Bronx Zoo, New York.—A Nankeen Night-Heron, paired with a male Black-crowned Night-Heron, laid an egg which hatched on 24th August, 1955, and the young one is reported to be doing well.

This Zoo now has two Emperor Penguins on exhibition, the only ones in any zoo in America.

Philadelphia.—Several important first hatchings include a Northern Eider Duck, a Philippine Duck, several European Sheld-Duck, and four Cayenne Wood Rails. Amongst the birds reared were Mandarin Ducks, an Upland Goose, Japanese White-necked Cranes, and half-a-dozen Rheas—the total hatched and reared of the last named now exceeds fifty. New arrivals are a pair of Darwin's Rheas—the first exhibited in the Garden.

San Diego.—Arrivals, one Red-headed Barbet (*Eubucco bourcierii salvini*), one Orinoco Fruit-Crow (*Pyroderus scutatus*).

Adelaide Zoo.—During the 1954-55 season birds of fifty species were bred. The more noteworthy being: 3 Swinhoe's Pheasants, 1 Siamese Fire-backed Pheasant, 1 Eclectus Parrot, 2 Blood-breasted Pigeons, 3 Ruddy Sheld-Ducks, and 5 Rheas. Important new arrivals were two pairs of Red-fronted New Zealand Parrakeets from the Wellington Zoo Gardens.

* * *

It is important that members should not forget that the success of the Society depends upon themselves. We trust that all will do their utmost in the coming year to extend still further our membership, and also, by writing for the Magazine, to lighten the labours of the few who are regular contributors to its pages. We believe that there are very many members who might, if they were disposed, contribute either articles or letters which would prove of interest to the reader.

of the Magazine. One of the purposes of our Society is the accumulation of facts ; and we would urge all who have facts to record to communicate them to the Editor, who will, if desired, gladly undertake the work of arranging them for publication.

A. A. P.

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REVIEWS

LES OISEAUX D'EAU DE BELGIQUE. By LEON LIPPENS, Second Edition. Published by E. Vercruysse-Vanhove., Saint-Andre-lez-Bruges. 1954.

This second edition of Monsieur Lippens' book on the water-birds of Belgium, which was published in 1941 and was soon out of print, is warmly welcomed. Monsieur Lippens, a naturalist of international repute, who has studied birds all his life, is particularly fitted to write on this group. As he says in his foreword to the first edition, for fifteen years he had the opportunity of studying waterbirds in one of the best regions of Belgium, on the coast near the Dutch frontier ; he was able to watch them closely and constantly, and also ringed about 20,000 specimens. In addition, when he was in the Belgian Congo, in the Albert National Park from 1935-36, he made a special study of the waterbirds, in particular the migrants which wintered there. Now with the second edition of the book Monsieur Lippens has been able to add the results of a further thirteen years of close association with the waterbirds in the particularly favoured corner of Belgium where he lives.

A full description of the distinctive characters, habits, and habitat of each species is given, with detailed information regarding their distribution in Belgium and more general regarding their distribution in other countries. Nesting and migration are also dealt with fully and valuable keys of identification are added. One hundred and forty-five species are included and the Latin, French, Flemish, English, and German names of each are given. There are twenty-four coloured plates by Mademoiselle Ingeborg Frederiksen and one coloured plate, depicting the heads of three species of Swans, by Comte Rodolphe van der Stegen de Shrieck. In addition are a number of maps to illustrate migration of various species and some black and white drawings showing differences in feather pattern of closely allied species by the author.

Monsieur Lippens writes in a clear and simple style which those whose French is not very strong should be able to read without too much difficulty, and even those who cannot read the language will gain a great deal of information from this most excellent book.

P. B-S.

THE BREEDING BIRDS OF SOMERSET AND THEIR EGGS.
By STANLEY LEWIS. Arthur H. Stockwell, Ltd., Ilfracombe,
Devon. Price 21s.

This book contains the observations made by the author over fifty years, but he was not destined to see the result of his labours in print for he died in 1949, just before the manuscript could be completed. The notes and data were entrusted to W. C. Taunton, who writes the foreword and who, with the editorial assistance of K. M. Willcox, has put them into book form.

Stanley Lewis was a keen ornithologist who lived in Somerset all his long life and devoted a large part of his time to the study of birds. He had a wide knowledge of the distribution of the county's birds and it was his wish to pass on this knowledge to others. The book is illustrated with twenty-three photographic plates and there is a useful map; 135 species of birds are dealt with, some at greater length than others. Reference to the distribution of the species in the county is followed by a description of the bird, its song, calls, nest, eggs, and food, and a list of the local names.

Though it is stated in the foreword the book is not intended to be a history of all the species of birds which have ever been recorded within the county of Somerset, but is simply a record of those breeding birds which came to the notice of the late Stanley Lewis during the past fifty years, it is certainly a useful addition to the county ornithologies.

P. B-S.

* * *

CORRESPONDENCE

BREEDING OF MOTMOTS IN CAPTIVITY

I read with great interest the excellent illustrated article by Roland W. Hawkins, Curator of Birds of the Highland Park Zoological Gardens, Pittsburgh, Pa., U.S.A., titled "First Breeding of the Common Motmot (*Momotus momota*) in Captivity". Yesterday I wrote Mr. Hawkins to acquaint him with the fact that in 1951 a pair of Equatorial Motmots (*Momotus momota equatorialis*), that lived in our large planted open flight cage, successfully hatched two young.

The parent birds were first noticed taking food into their burrow on the 21st July. On the 30th July one baby was found dead, but on the 22nd August a second baby left the nest. This bird was fully feathered and could fly quite well. The description of the young as described by Mr. Hawkins agreed exactly with our observations. As this second young Motmot was being molested by a White-crested Laughing Thrush, it was removed from the open flight cage and placed in a good size cage in our quarantine room, where it thrived. It was quite tame and took food for itself from the very beginning. A very short account of this success was published in our Zoo magazine *America's First Zoo*, Vol. 3, No. 3, September, 1951.

JOHN A. GRISWOLD,
Curator of Birds.

ZOOLOGICAL SOCIETY OF PHILADELPHIA,
34TH STREET AND GIRARD AVENUE,
PHILADELPHIA, U.S.A.

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The date attached to each name is that of the year of election or restoration to the Membership.

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 1923 BEEVER, G. ; High Croft, Wakefield Road, Upper Cumberworth, Huddersfield.
 1954 BELFIELD, B. ; Alma House, Dalton, Parbold, Nr. Wigan, Lancs.
 1926 BELL, W. DENNIS ; Sloelands Farm, Chesham, Bucks.
 1948 BELLARS, C. G. ; 55 Riley Road, Overport, Durban, South Africa.
 1952 BENEDICT, B. ; 350 E. 52nd Street, New York 22, N.Y., U.S.A.
 1946 BENNETT, Mrs. M., F.Z.S. ; 3 Adversane Road, Worthing, Sussex.
 1954 BENVIE, D. M. ; Heughhead, Friockheim, By Arbroath, Angus, Scotland.
 1906*BERESFORD-WEBB, G. M. ; Norbryght, South Godstone, Surrey.
 1955 BERGMAN, Dr. S., D.Sc. ; Rönninge per Stockholm, Sweden.
 1954 BERKOUWER, A. ; Eendenkooi, Bakkerswaal, Lekkerkerk, Holland.
 1955 BERRY, N. A. ; Parattah, Tasmania, Australia.
 1921 BEST, C. ; Bank House, Kirkgate, Newark, Notts.
 1949 BEST, R. E., F.Z.S. ; Montclare, Furze Hill Road, Torquay.
 1952 BETTISON, L. J. ; R. R. No. 2, Oliver, B.C., Canada.
 1953 BEULCKE, M. ; 54 Jan Breijdelaan, Kortrijk, Belgium.
 1955 BEVINGTON, Mrs. D. ; Gallowbrook, St. Neots, Hunts.
 1939 *BHAVNAGAR, RAOL SHRI DHARMAKUMARSINHJI OF, F.Z.S., M.B.O.U. ; Dil Bahar, Bhavnagar, Saurashtra, India.
 1951 BHAVNAGAR, YUVARAJ SHRI VIRBHADRASINGHJI OF ; Nilambag Palace, Bhavnagar, Saurashtra, India.
 1952 BIALLOSTERSKI, W. ; Kruidbergerweg 99, Santpoort, Holland.
 1945 BIRCH, P. A., F.Z.S. ; "Avian Vale," Dodford, Nr. Bromsgrove, Worcs.
 1954 BIRCHALL, Mrs. E. J. ; "Sundown," Storrs Park, Bowness-on-Windermere, Westmorland.
 1954 BIRD, L. ; 70 Blaketown, Seghill, Northumberland.
 1952 BIRD, W., F.R.P.S., F.I.B.P. ; The Coach House, 54 Gwendolen Avenue, Putney.
 1948 BIRRELL, Mrs. J. DALZIEL ; Christmas Cottage, Brick Kiln Common, Wisborough Green, Sussex.
 1950 BIRTLES, ALBERT ; 169 Royds Street, Rochdale, Lancs.
 1952 BLAAUW, A. F. H., O.B.E. ; "de Wissel," Rysbergen (N.-B.), Holland.
 1937 BLAND, W. P., F.Z.S. ; 3 Station Approach, Meols, Hoylake, Cheshire.
 1951 BLOOM, R. ; 20 Churchfield Road, Walton-on-Naze, Essex.
 1946 BLYTHE, HYLTON ; 1 Grand Parade, Tolworth, Surrey.
 1949 *BONNER, Miss Kay ; 61 Chase Road, Oakwood, N. 14.
 1940 BONNY, J. W. ; Springfield, 166 Whitegate Drive, Blackpool, Lancs.
 1911 BOURKE, Hon. Mrs. G. ; Rotherend, Rotherfield Road, Henley-on-Thames.
 1951 BOURNE, Mrs. V. M. ; 78 Idmiston Road, West Norwood, S.E. 27.
 1948 BOWLES, D., B.Sc., F.Z.S. ; Zoological Park, Murrayfield, Edinburgh 12.
 1953 BOYD, W. J. ; 15 Unity Street, Carrickfergus, Belfast.
 1947 BRADFORD, P. A. ; "The King's Arms," 96 Wandsworth High Street, London, S.W. 18.
 1951 BRADLEY, R. H. ; 13 Waubesa Street, Madison, Wisconsin, U.S.A.
 1950 BRAIN, William, F.Z.S. ; Haynes, 30 Rushworth Road, Reigate, Surrey.

- 1951 BRATLEY, G. W. ; 39 Westfield Avenue, Pontefract, Yorks.
 1953 BRIDEAUX, H. G. ; Haigh-Moor, La Rocque, Jersey, C.I.
 1953 BROADBENT, W. ; 13 Pine Grove, Southport, Lancs.
 1949 BROCK, DONALD S. ; 5840 Seminary Court, Oakland 5, California, U.S.A.
 1955 BROECKE, VANDEN G. ; Wakken, West Flanders, Belgium.
 1933 BROOKES, Miss F. C. ; Massam Hall, Old Leake, Boston, Lincs.
 1955 BROOKING, A. H. ; 31 Grovelands Road, Purley, Surrey.
 1931 BROWN, E. J. ; 29 Dean Road, Bitterne, Southampton.
 1946 BROWN, RALPH ; The Pleasants, Aberdour, Fife, Scotland.
 1950 BROWN, Dr. REGINALD E. B. ; 6 Barker Street, Newcastle, N.S.W., Australia.
 1924 BROWN, W. FERRIER ; 85 Yew Tree Road, Southborough, Kent.
 1952 BROWN, W. G. ; Strathclyde, 8 Carrick Drive, North Mount Vernon, Glasgow, E. 2.
 1947 BRUYNEEL, J. ; Domaine de Steenokkerzeel, Régie, Belgium.
 1942 *BRYCE, Mrs. PETER COOPER ; Florestal, Hope Ranch, Santa Barbara, Calif., U.S.A.
 1928 BUCHANAN, A. ; Viewbank, 33 Townhill Road, Dunfermline, Fife.
 1938 BUCKINGHAM JONES, C., LL.M. ; Dibrugarh, Assam, India.
 1953 BUNTON, Dr. P. H. ; "Elim," P.O. Addo, Cape Province, South Africa.
 1953 BURBRIDGE, J. H. ; Ambleside Water Gardens and Aviaries, Lower Weare, Axbridge, Somerset.
 1952 BURTON, M., D.Sc., F.L.S., F.Z.S. ; British Museum (Natural History), Cromwell Road, London, S.W. 7.
 1953 BURY, The Viscountess, J.P. ; Mount Stewart, Newtownards, Co. Down, N. Ireland.
 1947 *BUTE, The Most Hon. the Marquess of, F.Z.S., M.B.O.U. ; Kames Castle, Isle of Bute, Scotland.
 1942 BUXTON, J. LEAVESLEY, F.Z.S. ; Brightlea, 227 Streetsbrook Road, Solihull, Birmingham.
 1953 *CAFFERTY, Miss D. I. ; 657 Wellington Avenue, Chicago 14, Ill., U.S.A.
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 1933 CAMPEY, A. D., B.E.M. ; 117 Grovehill Road, Beverley, Yorks.
 1934 CAPRON, C. N. ; 1020 South L. Street, Lake Worth, Florida, U.S.A.
 1954 CARLSSON, T. ; Skolgatan 9, Malmberget, Sweden.
 1955 CARPENTIER, J. ; Diepestraat 59, Antwerp, Belgium.
 1918 CARR, PERCY ; Ormond Lodge, Newbold-on-Stour, Nr. Stratford-on-Avon.
 1952 CARR, W. H. ; Murray Lodge, Newmarket, Suffolk.
 1952 CARTHEW, W. R. ; P.O. Box 49, Vereeniging, South Africa.
 1950 CARTWRIGHT, K. G. ; "The Gables," 10 Brick-Kiln Street, Quarry Bank, Nr. Brierley Hill, S. Staffs.
 1954 CASTAN, Dr. R. ; 16 Brd. Président Fallières, Gabès, Tunisie.
 1953 CASTLE, D. F. ; "Clive Cottage," Stockens Green, Knebworth, Herts.
 1954 CHADWICK, J., F.Z.S. ; Sewerby, Bridlington, E. Yorks.
 1932 *CHAPLIN, The Right Hon. the Viscount, F.L.S. F.Z.S., M.B.O.U. ; The Zoological Society of London, Regent's Park, N.W. 1.
 1951 CHEESMAN, M. R. ; 4888 South 13th East Street, Salt Lake City 7, Utah, U.S.A.
 1930 CHICHESTER, Mrs. H. G. ; Galgorm Castle, Ballymena, Co. Antrim, N. Ireland.
 1914 CHRISTIE, Mrs. G. ; Kellas, By Elgin, Morayshire.
 1945 CLARENCE, Capt. A. A. ; 25 Elms Avenue, Parkstone, Dorset.

- 1949 CLARK, G. T., "Maidsmere," Finstall, Bromsgrove, Worcs.
 1942 CLARK, Mrs. G. T., F.Z.S. ; "Maidsmere," Finstall, Bromsgrove, Worcs.
 1953 CLAYDEN, Major C. N. ; The Middlesex Regt., Inglis Barracks, Mill Hill, N.W. 7.
 1953 CLAYTON, J. C. ; 127 Egerton Street, Farnworth, Nr. Bolton, Lancs.
 1952 CLAYTON, S. ; Heathfield, St. Philip's Road, Newmarket, Suffolk.
 1950 CLAYTON, T. L. ; 75 Park Road, Hampton Hill, Middx.
 1938 CLEMENTS, O. E., L.D.S., R.C.S.(Eng.) ; 1 Bayswater Road, Highlands, Salisbury, Southern Rhodesia.
 1949 CLEMITSON, J. W. ; 25 St. Paul's Gardens, Whitley Bay, Northumberland.
 1955 COLQUHOUN, J. M. ; Ardmore, Papakura, R.D., New Zealand.
 1954 CONWAY, W. G. ; St. Louis Zoological Park, St. Louis 10, Mo., U.S.A.
 1953 COOMBER, M. S. ; c/o The Bungalow, Burwash, Sussex.
 1950 COOMBS, E. W., F.Z.S. ; "The Woodlands," Walderslade Road, Nr. Chatham, Kent.
 1926 COOPER, Mrs. C. M. ; "Villa D'Este," Burges Road, Thorpe Bay, Essex.
 1953 COOPER, Mrs. F. D. ; Dunstan Lodge, Churchdown, Gloucester.
 1952 COOPER, J. T. ; Hall Farm, Outwell, Nr. Wisbech, Cambs.
 1951 CORBETT, R. C. U. ; Itchen Abbas Cottage, nr. Winchester, Hants.
 1953 CORLETT, JEROME ; Rt. 1—Box 878, Mobile, Alabama, U.S.A.
 1942 CORWIN, SAUL C. ; 165 Broadway, New York 6, New York, U.S.A.
 1955 COSTA, Dr. C. FERNANDO ; Rua Dr. Antonio Martins No/11, Estoril, Portugal.
 1950 COWARD, D. M. ; "Karibu," Longfellow Avenue, Wellsway, Bath.
 1925 COWLEY, H. ; The Manor House, Bubbenhall, Nr. Coventry.
 1947 COWLISHAW, A. G. ; The Chalet, 35 Aylesbury Street, Bletchley, Bucks.
 1933 COX, Mrs. B., F.Z.S. ; Barncrosh, Castle Douglas, Scotland.
 1952 COYNE, Major S. F. ; The Sherwood Foresters, Normanton Barracks, Derby.
 1946 CREWES, T. R. W. ; Silverdale Cottage, Queensthorpe Road, Sydenham, S.E. 26.
 1929 CROFTS, ROBERT T. ; 85 Reeves Avenue, Cross Heath, Newcastle, Staffs.
 1949 CRONE, G. H. ; Jan Luykenstraat 16, Amsterdam, Holland.
 1948 CUMMINGS, W. D. ; The Keston Foreign Bird Farm, Ltd., Brambletye, Keston, Kent.
 1952 CUNNINGHAM, A. M., F.Z.S. ; 21 Kitchener Road, East Finchley, N. 2.
 1955 CURLEWIS, Dr. B. WARREN ; 86 Crescent Road, Newport, N.S.W., Australia.
 1952 CURTO, F. S. ; North Side Conservatory-Aviary, West Park, Pittsburgh 12, Pennsylvania, U.S.A.
 1939 DABNER, P. L. ; 56 Arkwright Road, Sanderstead, Surrey.
 1951 D'AETH, A. H., F.Z.S. ; 45 Ormonde Terrace, Regent's Park, N.W. 8.
 1946 DALBORG-JOHANSEN, J. ; Dyrhaage, Graabrødreplads 6, Odense, Denmark.
 1949 DALGETY, C. T., M.B.O.U. ; Radnall Mill, Baldock, Herts.
 1937 DALLOW, F., M.B.E. ; 13 Hillingdon Road, Stretford, Manchester.
 1954 DANECOURT, W. A. ; Hartley, Dartford, Kent.
 1948 DANIHER, M. F. ; 182 Chaussée de Charleroi, Brussels, Belgium.
 1950 DARMAN, H. J., F.Z.S., F.R.H.S. ; 44 Fraser Road, Walthamstow, London, E. 17.
 1932 DARNTON, Mrs. I. ; Sissinghurst Court, Cranbrook, Kent.
 1954 DAVIES, G. C. N. ; P.O. Box 1155, Lourenço Marques, Portuguese East Africa.

- 1955 DAVIS, E. F. ; Columbus Zoological Park, Columbus, Ohio, U.S.A.
 1927 DAVIS, Sir GODFREY, I.C.S., F.Z.S. ; Beresfords, Boughton Monchelsea,
 Nr. Maidstone, Kent.
- 1941 DAVIS, H. H. ; Little Stoke, Patchway, Bristol.
- 1950 DAY, J. N. E., M.Sc., Ph.D. ; 18 Home Wood Road, St. Albans, Herts.
- 1952 DEACON, D. R. ; 41 Hilders Road, Western Park, Leicester.
- 1951 DEAN, A. W. S. ; Sudbrook Manor, Sudbrook, Grantham.
- 1954 DEAN, T. ; 35 George Street, Louth, Lincs.
- 1955 DEAN, W. ; 20 Manor Road, Bolenall, Tamworth, Staffs.
- 1952 DEANS, G., F.Z.S. ; 3 New Edinburgh Road, Dalkeith, Midlothian.
- 1953 D'EATH, J. O. ; The Grove, Hadley, Barnet, Herts.
- 1953 DE BEAUMONT, Mrs. G. ; Blairlogie House, Menstrie, Clackmannanshire,
 Scotland.
- 1954 DE CARVALHO MONTEIRO, A. ; Praca dos Restauradores 13-2° D., Lisbon,
 Portugal.
- 1917 DECOUX, A. ; Géry, Aix-sur-Vienne, Haute-Vienne, France.
- 1948 DE GOEDEREN, G. ; Orteliuskade 74, Amsterdam, Holland.
- 1955 DE KANTER, A. L. G. ; 22 Thwaite Street, Cottingham, E. Yorks.
- 1903** DENNIS, Mrs. H. E. ; Lower Nash, Nutbourne, Pulborough, Sussex.
- 1924 DENNY, Mrs. H., C.B.E., J.P. ; The Chantry, Horsham, Sussex.
- 1930 DE PASS, GERALD V., F.Z.S. ; The Old Kennels, Satwell, Nr. Henley-
 on-Thames.
- 1932 DE PLEDGE, Miss BERYL ISABEL, F.Z.S. ; 9 Beaufort House, Beaufort Street,
 Chelsea, S.W. 3.
- 1948 DESAI, PRADYUMAN K. ; Takhteshwar Plot, Bhavnagar, Saurashtra, India.
- 1945 DEXTER, J. E., M.M. ; Lamorna, Ongar Road, Pilgrims Hatch, Nr.
 Brentwood, Essex.
- 1951 DIEDRICH, W. W. ; Dierenpark Wassenaar, Rijkssstraatweg 667, Wassenaar,
 Holland.
- 1955 DIERCXSSENS, LOUIS ; President, Société Royale de Zoologie d'Anvers,
 26 Place Reine Astrid, Antwerp, Belgium.
- 1954 DIGBY, J. M. T. ; 48 Chelmsford House, Holloway Road, N. 7.
- 1955 DIGGLE, A. ; 10 Cross Hill Street, Highcrompton, Shaw, Nr. Oldham,
 Lancs.
- 1955 DILGER, Professor W. C. ; Dept. of Biology, St. Lawrence University,
 Canton, New York, U.S.A.
- 1955 DI SABATO, L. R. ; 2362 Joyce Avenue, Columbus, Ohio, U.S.A.
- 1954 DOLAN, J. ; 1469 West Avenue, Bronx 62, New York, U.S.A.
- 1953 DOLTON, K. W. ; Sundown, Oakleigh Avenue, Hallow, Worcester.
- 1954 DOMINGUEZ, Dr. R. H. ; Box 248, Utuado, Puerto Rico.
- 1949 DOMINICK, GEORGE D. ; 13 Nokomis Circle, Knoxville 16, Tennessee,
 U.S.A.
- 1924 *DOOLY, THOMAS L. S. ; Whimbrel, Kirklake Road, Formby, Nr. Liverpool.
- 1955 DÖPFER, Frau ERIKA ; Hercules Strasse 8, Kassel, Germany.
- 1953 DOSSCHE, ARM. ; Toekomststr. 38, St. Amandsberg, Ghent, Belgium.
- 1955 DOUETIL, B. N. ; "Chalfont," Waynelete Tower Ave., Esher, Surrey.
- 1951 DOUGHTY, E. C. ; 53 Bath Street, Market Harborough, Leicester.
- 1947 DRING, W. T., F.Z.S. ; 12 East Park Street, Chatteris, Cambs.
- 1953 DRING, Mrs. W. T., F.Z.S. ; 12 East Park Street, Chatteris, Cambs.
- 1955 DRIVER, H. L. ; 64 Laburnam Road, Biggleswade, Beds.
- 1947 DUFOUR, Colonel JOHN ; 167 Avenue de Belgique, Antwerp, Belgium.
- 1954 DUFTY, J. H., J.P. ; Post Office, Aberdare, 3 N., N.S.W., Australia.
- 1939 DULANTY, BRIAN H., F.Z.S. ; Fisheries Cottage, Chorley Wood, Herts.

- 1922 DUNMORE, Oscar E., F.Z.S. ; 31 Mickleton Drive, Evington, Leicester.
 1930 DUNSTER, Capt. J. E. ; Bucklebury Village, Nr Reading, Berks.
 1927 DUYZEND, P. ; Koppeldijk 24, Huize, "Casarca," Zeist, Holland.
 1953 DVORAK, K. ; 305 N. Kilbourn Avenue, Chicago 24, Ill., U.S.A.
- 1954 EASTMAN, J. G. ; Columbine Cottage, Domewood Estate, Copthorne, Nr. Crawley, Sussex.
 1936 EAVES, W. L., F.Z.S. ; 581 Warwick Road, Solihull, Birmingham.
 1954 EGAN, E. ; 16 Tewkesbury Avenue, Droylsden, Nr. Manchester.
 1955 ELLIS, C. W. ; Corsham Court, Corsham, Wilts.
 1926 ELWES, Mrs. ROBERT ; Little Congham, King's Lynn, Norfolk.
 1949 ENEHJELM, C. AF, C.M.Z.S. ; Högholmens Djurgård, Helsingfors, Finland.
 1935 ENGELBACH, Dr. PIERRE ; 64 rue Saint-Denis, Colombes (Seine), France.
 1955 ESSON, Mrs. M. D. ; 3 Western Avenue, Gidea Park, Romford, Essex.
 1950 EVANS, F. J., F.Z.S. ; 51 Brunswick Road, Leyton, E. 10.
 1929 EVANS, Miss JOAN ; Townsend, Middle Wallop, Hants.
 1950 EVANS, R. E., M.B., Ch.B. ; 12 Kirklee Terrace, Glasgow, W. 2.
 1953 EVANS, T. H. ; Cedar Villas, Ruabon Road, Johnstown, Nr. Wrexham, N. Wales.
 1955 EVERITT, Sqd.-Ldr. C. ; 5 Brooklyn Grove, South Norwood, S.E. 25.
 1955 EVERITT, Mrs. C. M. ; 5 Brooklyn Grove, South Norwood, S.E. 25.
- 1955 FAIRBARN, ANDREW ; The Round Hill, South Benfleet, Essex.
 1953 FAIRIE, G. W. ; 76 Stirling Road, Tullibody, Clackmannanshire, Scotland.
 1949 FANCUTT, FRANK, F.Z.S. ; 86 Linden Drive, Alvaston, Derby.
 1954 FANNING, F. ; Box 1782, Abilene, Texas, U.S.A.
 1946 FAUDELL, C. L. ; 45 Dickason Road, Heathmont, Ringwood, Victoria, Australia.
 1951 FELSTEAD, Miss M. ; 108 Beulah Road, Thornton Heath, Surrey.
 1951 FIELD, Mrs. B. ; Whitebrook, Widbrook Common, Cookham, Berks.
 1950 FIERLAFIJN, J. ; Karel Oomstraat 24, Antwerp, Belgium.
 1953 FINCH, Col. H. B., M.C. ; "Revesby," Hutton Road, Ash Vale, Nr. Aldershot, Surrey.
 1954 FINDLAY, Major J., D.S.O., F.R.Z.S. ; "Cosie Brae," West Cults, Aberdeenshire.
 1952 FIORAVANTI, The Marquis ; Bellosguardo 14, Florence, Italy.
 1955 FISHER, A. D. ; Lower Cathill Farm, Penistone, Sheffield.
 1953 FLAXMAN, G. ; 618 Layard Street, London, Ontario, Canada.
 1954 FLETCHER, S. ; 4 Loverseed Vale, Union Road, Nottingham.
 1948 FOGG, H. ; 190 Station Road, Wylde Green, Sutton Coldfield, Nr. Birmingham.
 1925 FOOKS, F. E. ; Clères, Seine Inférieure, France.
 1932 FOOKS, H. A. ; The Oast House, Down Lane, Frant, Sussex.
 1951 FORD, J. ; 186 Woolwich Church Street, Woolwich, S.E. 18.
 1953 FOSTER, P. ; 72 Stockport Road, Cheadle Heath, Stockport.
 1951 FOTHERGILL, Miss S. A., F.Z.S. ; 8 Whitelands House, Sloane Square, London, S.W. 3.
 1953 FRAMPTON, P. ; 53 Brunker Road, Broadmeadow, N.S.W., Australia.
 1955 FRANCIS, Miss B. ; 51 Chelsea Manor Buildings, Flood Street, Chelsea, London, S.W. 3.
 1954 FRANKS, D. C. ; Argyll, 75 Old Road, Harlow, Essex.
 1933 FRAYNE, RALPH ; 50 Cantley Lane, Bessacarr, Doncaster.
 1950**FRILING, W. ; Eikelenberg, Brasschaat, Nr. Antwerp, Belgium.

- 1950 FROST, R. ; The Gravels, 61 Station Road, Brimington, Chesterfield.
 1908 FROST, WILFRED J. C. ; c/o Zoological Society of London, Regent's Park, London, N.W. 1.
 1947 FROSTICK, W. B., M.B.O.U. ; 26 Minster Precincts, Peterborough, Northants.
 1929 FURNER, A. C. ; Oakdene, 115 Whitaker Road, Derby.
- 1950 GADD, J. A. ; 75 Holly Road, Aldershot, Hants.
 1948 GALLAND, JOHN F. ; 197 Fraser Street, Howick, Pietermaritzburg, Natal, South Africa.
 1953 GARDENER, L. F. ; 10 New Way, Pinelands, Cape Town, S. Africa.
 1941 GARDNER, A. H. ; 21 Kingsland Road, Strathfield, Sydney, N.S.W., Australia.
 1951 GARNER, R. ; 1 Arno Vale Gardens, Woodthorpe, Nottingham.
 1951 GARRATT, J. C. ; "Crossways," Sea Avenue, Rustington, Sussex.
 1949 GARY, F. L. ; Earlham, Columbus, New Jersey, U.S.A.
 1950 GASK, Miss D., F.Z.S. ; "Twa Noon," Lincoln Road, Chalfont-St.-Peter, Bucks.
 1948 GEERTSEMA, Lt.-Colonel C. C. ; Soestdijk Palace, Baarn, Holland.
 1950 GEMMILL, JOHN ; Aikenhead, Kilmarnock, Ayrshire.
 1948 *GERARD, Lord, M.B.O.U. ; Blakesware, Ware, Herts.
 1953 GILBERT, R. N. ; 324 Hampton Avenue, Salt Lake City 4, Utah, U.S.A.
 1953 GILBERT, R. S. ; 160 Heath Park Road, Gidea Park, Essex.
 1950 GILBERT, W. O., F.Z.S. ; 31 Douglas Road, Luton, Beds.
 1950 GILBERT, Mrs. W. O., F.Z.S. ; 31 Douglas Road, Luton, Beds.
 1948 GILL, J. M. ; Kahfax, Station Approach, South Ruislip, Middx.
 1953 GILLAN, A. ; 66 Broomhill Road, Aberdeen, Scotland.
 1946 GILLEN, JOHN ; Ballycraigy, Ballymena, Co. Antrim, N. Ireland.
 1955 GILLMOR, R. A. F. ; 58 Northcourt Avenue, Reading, Berks.
 1955 GILMOUR, E. F., A.M.A., M.S.B.E. ; Director, Doncaster Museum and Art Gallery, Waterdale, Doncaster.
 1953 GJESSING, G. A. ; "Woodberry Hill," Konnerud, Drammen, Norway.
 1955 GLASS, Mrs. G. E. ; c/o Mrs. W. G. Hay, P.O. Hilton Road, Natal, S. Africa.
 1928 GLENISTER, A. G., F.Z.S., M.B.O.U. ; The Barn House, East Blatchington, Seaford, Sussex.
 1931 GLOVER, P. H., F.Z.S. ; (Present address unknown).
 1953 GLOVER, P. J. ; Redge Estate, P.O. Box 12, Ruiru, Kenya Colony.
 1950 GODWIN, J. H. ; 21 Vincent Road, Osterley, Isleworth, Middx.
 1950 GOETZ, L. DALE ; 3116 N. Ernst Street, Franklin Park, Illinois, U.S.A.
 1950 GOMM, F. A. ; The Cave, Amersham Road, Hazlemere, High Wycombe, Bucks.
 1953 GOOD, Mrs. E. H. ; Buckland Fields, Lymington, Hants.
 1945 GOODWIN, DEREK, M.B.O.U. ; Toft, Monk's Road, Virginia Water, Surrey.
 1953 GOPSILL, R. H. ; 152 Wyggeston Street, Burton-on-Trent.
 1945 GORDON, Mrs. BEATRICE HOOD CLAESON, F.Z.S. ; Cluny Castle, Monymusk, Aberdeen.
 1951 GORDON, W. H., Jr. ; 4412 West Sixteenth Street, Lubbock, Texas, U.S.A.
 1923 *GOSSE, LADY ; Aldgate, South Australia.
 1954 GRAHAM, G. ; 56 Market Square, Duns, Berwickshire.
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 1935 GRANT, FRANK ; Parklands, Stoughton Lane, Evington, Leicester.
 1953 GRANTHAM, R. H. ; 13 St. Wilfrids Road, New Barnet, Herts.

- 1951 GRAY, J., A.R.I.B.A. ; "Braemar," Dryburn Road, Durham Moor, Durham.
- 1950 GRAY, W. ; 4 Windsor Close, Trowell, Notts.
- 1954 GREED, R. E. ; Bristol, Clifton, and West of England Zoological Society, Clifton, Bristol 8.
- 1954 GREENWAY, K. W. ; "High Bank," Heath Road, Bladon, Oxford.
- 1952 GREGORY, J. J. ; 66 Carew Road, Hamden, Conn., U.S.A.
- 1954 GRELLIER, Mrs. R. ; Swindon Hall Farm, Swindon Village, Cheltenham.
- 1954 GREWCOCK, K. R. E. ; 36 Station Road, Marston Green, Nr. Birmingham.
- 1952 GRICE, H. ; Mount Pleasant, Hanging Grimston, Kirby Underdale, York.
- 1953 GRIFFITHS, A. V., F.Z.S., M.R.C.V.S. ; Bryn Awel, Llandyssul, Cards.
- 1946 GRIFFITHS, WILLIAM ; 19 Ethelbert Road, Wimbledon, London, S.W. 20.
- 1947 *GRISWOLD, JOHN A. ; The Zoological Society of Philadelphia, 34th Street and Girard Avenue, Philadelphia 4, Pa., U.S.A.
- 1951 GROUND, W. J. ; "Albion House," 61 Pinchbeck Road, Spalding, Lincs.
- 1917 GROVES, Hon. Mrs. McGAREL ; Battramsley House, Lymington, Hants.
- 1951 GRUBER, H. F., F.R.Z.S. (Scot.) ; 9 Churchill, Morningside, Edinburgh 10,
- 1928 GUBBAY, Mrs. MAURICE ; c/o Mrs. M. Ezra, Foxwarren Park, Cobham, Surrey.
- 1951 GUDMUNDSSON, Dr. F., M.B.O.U. ; Museum of Natural History, P.O. Box 532, Reykjavik, Iceland.
- 1947 GULLIVER, V. S. ; 33 Vale Road, Aylesbury, Bucks.
- 1927 GURNEY, Miss DIANA ; North Runcion Hall, King's Lynn.
- 1942 GUY, CHARLES P. ; Lamorna Bird Farm, Combe in Teignhead, S. Devon.
-
- 1939 HADDEN, NORMAN G. ; Underway, West Porlock, Somerset.
- 1952 HADLOW, L. A. ; Barbary Farm, Norton, Faversham, Kent.
- 1952 HADZIMA, J. ; 2059 Sweetwater Avenue, Spring Valley, California, U.S.A.
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- 1948 HALE, O. ; Laithfield, Digswell, Welwyn, Herts.
- 1955 HALL, D. B. ; "Woodfield," Velly Hill, Corsham, Wilts.
- 1955 HALL, W. C. ; Arden House, 8 Randolph Road, London, W. 9.
- 1937 HALVERSON, A. W. ; 5705 West Erie Street, Chicago 44, Ill., U.S.A.
- 1926 HAMPE, ALEX ; 13a Grub am Forst bei Coburg, Bavaria, American Zone, Germany.
- 1946 HANSEN, PAUL ; Gormsgade 3, I. Sal, Odense, Denmark.
- 1949 HANSEN, ROBERT J. ; P.O. Box 46, Gonzales, Calif., U.S.A.
- 1952 HANSEN, SVEND T. ; 101 Amager Landevej, Kastrop, Amager, Denmark.
- 1948 HARDY, G. C., Jr. ; 61 East 18th Avenue, New Westminster, B.C., Canada.
- 1942 HARE, TOM, M.D., B.V.Sc., M.R.C.V.S., M.B.O.U. ; 529a Finchley Road, London, N.W. 3.
- 1954 HARGREAVES, J. E. ; 256 Upper Batley Lane, Batley, Yorks.
- 1949 HARMAN, H. J. ; 10 Haydon Road, Dagenham, Essex.
- 1954 *HARMON, T. D. ; 3601 W.-102 Street, Inglewood 2, Calif., U.S.A.
- 1954 HARRAP, K. S. ; 2 Colchester Avenue, Sedgley Park, Prestwich, Nr. Manchester, Lancs.
- 1950 *HARRIS, A. J., Jr. ; Rte. 1—Box 24, Pendleton, Virginia, U.S.A.
- 1951 HARRIS, Mrs. E. ; 11 Prince Albert Street, Dudley, Worcs.
- 1955 HARRIS, J. W. ; "Roysden," Mayfield, Sussex.
- 1953 HARRIS, N. H. C. ; Pheasant Folly, Natal Spruit, Transvaal, S. Africa.
- 1955 HARTMANN, H. ; Ragnesminde, Glostrup, Denmark.

- 1945 HARVEY, ARTHUR W. H. ; Rydal, Long Rock, Penzance, Cornwall.
 1955 HARWOOD, P. ; Glebe Road, Darlington, Western Australia.
 1930 HASTINGS, P. H. ; 182 Sultan Road, Landport, Portsmouth.
 1951 HATCH, H. L. ; The Dudley Zoological Society, Dudley, Worcs.
 1952 HAWKE, E. H. ; Box 796, Lourenco Marques, Portuguese East Africa.
 1953 *HAWLEY, W. M. ; 703-15th Avenue, New Westminster, B.C., Canada.
 1946 HAYWARD, Mrs. D. A. ; Invermay, Highland Avenue, Brentwood, Essex.
 1950 HEARD, A. C. ; The Cedars, Baschurch, Shrewsbury.
 1947 HEATH, R. E., B.A., M.B.O.U. ; 2 Pembroke Court, Edwardes Square, W. 8.
 1955 HEDIGER, Professor Dr. H. ; Zoologischer Garten, Zurich, Switzerland.
 1952 HEMPSTED, H. J. ; 2 New Houses, Bacton Road, North Walsham, Norfolk.
 1955 HENDERSON, M. S. ; Heather Cottage, Potten End, Berkhamsted, Herts.
 1952 *HENDERSON, W. B. ; Viewfield House, Bankfoot, Perthshire.
 1945 HENRY, B. R., M.B., B.Ch., D.P.H., J.P. ; Four Winds, Comber, Belfast, N. Ireland.
 1952 HENRY, G. M. ; "Ainsgarth," Fore Street, Constantine, Falmouth.
 1951 HERMITAGE, R. ; 53 Burnt Oak Terrace, Gillingham, Kent.
 1955 HESLOP, H. J. ; Witton Lodge, Simonstone, Nr. Burnley.
 1951 HILL, K. ; 93 Elmhurst Drive, Hornchurch, Essex.
 1939 HILL, W. C. OSMAN, M.D., Ch.B., F.L.S., F.Z.S. ; Lancaster House, Prince Albert Road, London, N.W. 8.
 1945 HINDLE, E., M.A., Sc.D., Ph.D., F.R.S., F.L.S., F.Z.S. ; The Athenaeum, Pall Mall, London, S.W. 1.
 1926 HIRST, ROBERT S., F.Z.S. ; Swincliffe House, Gomersal, Nr. Leeds.
 1954 HOBDAY, Miss S. I. ; 149 Holland Park Avenue, London, W. 11.
 1953 HOBSON, Mrs. D. A. ; Warren Cottage, Totland Bay, Isle of Wight.
 1947 HODGES, J. R., Ph.D., F.Z.S. ; 23 Ashridge Gardens, Pinner, Middlesex.
 1955 *HOFFMANN, L. ; Tour du Valat, par Le Sambuc, B.D.Rh., France.
 1922 HOLLAS, Mrs. K. E., F.Z.S. ; Hothersall Hall, Ribchester, Nr. Preston, Lancs.
 1930 *HOLLOND, Miss GLADYS M. B. ; Great Ashfield House, Bury St. Edmunds, Suffolk.
 1951 HOLM, BJÖRN ; Kyrkogatan 5, Kiruna, Sweden.
 1954 HOOPER, S. ; 35 Frederick Terrace, Wisbech, Cambs.
 1951 **HOPKINSON, Miss E. M. ; "Wynstay," Balcombe, Nr. Haywards Heath, Sussex.
 1928 HORNE, DOUGLAS PERCY ; Lloyds, Leadenhall Street, London, E.C. 3.
 1954 HOSKINS, N. ; The Cottage, Park Road East, Uxbridge, Middx.
 1934 HOUSDEN, Major E. F., M.C., T.D., M.A., F.Z.S. ; 126 Bessborough Road, Harrow.
 1948 HOUSDEN, EDWIN J. T. ; 29 Putney Hill, London, S.W. 15.
 1933 HOUSDEN, Dr. LESLIE, O.B.E. ; 29 Putney Hill, London, S.W. 15.
 1942 HOVELL, S. ; 29 Wood Lane, Long Sutton, Spalding, Lincs.
 1952 HUDDART, B. J., F.Z.S., M.B.O.U. ; Shirley House, Marsh Lane, Taplow, Bucks.
 1956 HUEBNER, H. B. ; Route 4, Box 420, Niles, Michigan, U.S.A.
 1955 HUGHES, G. ; "Ramblers," Amos Lane, Wednesfield, Wolverhampton.
 1950 HUGHES, N. D. ; 1 High Street, Hampton Hill, Middx.
 1953 HUNT, W. G. ; 26 Middle Street, Brixham, Devon.
 1939 HURLBURT, Dr. W. E. ; Vineland, Ontario, Canada.
 1930 HUTCHINSON, G. ROWLAND ; P.O. Box 770, Auckland, C.1, New Zealand.
 1947 HUYTON, A. E. ; 55 Victoria Road, Great Crosby, Liverpool 23.

- 1940 ILES, GERALD T., F.Z.S. ; Zoological Gardens, Belle Vue, Manchester 12.
 1939 INDGE, H. J., F.Z.S. ; Trimstone, Thorpe, Surrey.
 1953 INGLIS, J. F., F.R.Z.S. (Scot.); Alford Private Hotel, Alford, Aberdeenshire.
 1954 INGRAM, Mrs. P. ; 46^c Edwardes Square, London, W. 8.
 1948 IRVING, G. J. ; 2 Grove Road, Egremont, Cumberland.
 1953 IRVING, N. S. ; Eardswick, Newcastle Road, Gorsty Hill, Nr. Crewe, Cheshire.
 1952 *ISAKSON, Dr. E. W. ; 168 West 12th Street, Ogden, Utah, U.S.A.
 1926 ISENBERG, A. H. ; 451 Portola Road, Woodside, California, U.S.A.
- 1955 JACK, ANTHONY ; 15 Upper Berkeley Street, London, W. 1.
 1950 JACKSON, ROBERT, F.Z.S. ; Holly Bank Nurseries, Grove Lane, Hale, Altrincham, Cheshire.
 1951 JACOBSON, OWE ; Kaprifolgatan 4, Malmö, Sweden.
 1953 JAKOBSSON, Miss D. A. ; Summerlands Cottage, Ferndown, Wimborne, Dorset.
 1950 JAMES, N. ; 1 Central Drive, Fenton, Stoke-on-Trent.
 1942 JANSON, CHARLES W. ; 16 Wilton Crescent, London, S.W. 1.
 1953 JASAWALLA, C. M. ; "Hill Crest," 14 Salisbury Park, Poona, India.
 1947 *JASDAN, Y. S. SHIVRAJKHACHAR OF ; The Palace, Jasdan, (Saurashtra), India.
 1956 JEFFERY, J. ; Waterhayne, Yarcombe, Honiton, Devon.
 1953 JOHNSON, D. M. ; Rte 4, Box 312, Port Orchard, Washington, U.S.A.
 1952 JOHNSON, F. E. B. ; "Willow Close," Mill Lane, Hulcote, Bletchley, Bucks.
 1951 JOHNSTONE, S. T. ; The Wildfowl Trust, The New Grounds, Slimbridge, Glos.
 1949 JONES, C. G. ; 8416 N.E. 3rd Place, Route 1, Bellevue, Washington, U.S.A.
 1933 JONES, F. Terry, F.Z.S. ; Leckford Abbas, Stockbridge, Hants.
 1953 JONES, Sgt. M. LEE, F.Z.S. ; Headquarters Detachment, 36th Medical Battalion (Sep), A.P.O. 165, Hanau am Main, Germany.
 1934 JONES, S. B. ; 265 Northway, Maghull, Nr. Liverpool.
 1950 JONES, Major V. DILWYN, M.B.E., M.M., T.D. ; "Sherwood," Grosvenor Road, Llandrindod Wells, Radnor.
- 1955 KAGAWA, MITAMI ; Ritsurin Park Zoo, Takamatsu City, Kagawa-Ken, Japan.
 1953 KELL, W. ; 1 Ash Terrace, Leasing Thorne, Bishop Auckland, Co. Durham.
 1951 KELLOGG, Mrs. F. M. ; R.F.D. 1., Pound Ridge, New York, U.S.A.
 1953 KENDALL, S. B., M.R.C.V.S.; Weir Cottage, Bridge Road, Chertsey, Surrey.
 1955 KENNEDY, D. ; Quitman, Georgia, U.S.A.
 1927 KERR, J. E. ; Harviestoun, Dollar, Scotland.
 1953 KERSLEY, Mrs. M. ; Little Butts Farm, Cousley Wood, Wadhurst, Sussex.
 1955 KILLICK, B. M. ; "Sandhome," Raunds, Wellingborough, Northants.
 1938 KING, H. T. ; Flat B, 36 Magdala Road, Mapperley Park, Nottingham.
 1953 KINGSLAND, W. F. ; Redding, Connecticut, U.S.A.
 1950 KINGSTON, W. R. ; Springfields, Betchton, Sandbach, Cheshire.
 1950 KIRK, KEITH C. ; 54 Station Road, Sutton-in-Ashfield, Notts.
 1953 KIRK, Dr. R. S. ; 3 Park Crescent, London, W. 1.
 1948 KIRKALDY, Mrs. M., F.Z.S. ; The Grove, Warley Mount, Brentwood, Essex.
 1952 KIRKHAM, R. G. ; "The Gables," Wynnsward Park, Clonskeagh, Co. Dublin, Eire.

- 1952 KLAASEN-SÉE, Mrs. M. ; Papaverstraat 42, Bussum, Holland.
 1954 KLÖVEKORN, WERNER ; Pfalzdorferstrasse 61, (22A) Goch/Rhld, Western Germany.
 1950 KNIGHTS, W. A. ; 144 Argyle Street, Cambridge.
 1928 KNOBEL-HARMAN, Miss M. H., F.Z.S. ; 19 Connaught Square, London, W.2.
 1952 KNÖS, C. J. ; Fish and Wildlife, Kenai, Alaska, U.S.A.
 1954 KOIDE, HIDEO ; Kabaïke Tokoname-City, Chita-gun, Aichi-pref, Japan.
 1954 KRAUS, F. ; Neuried 1, Muenchen 49, Germany.
 1955 KREUGER, R. ; Stockholmsgatan 17, Helsingfors, Finland.
 1954 KYME, R. T. ; 30 King Street, Kirton, Nr. Boston, Lincs.
- 1947 LABDON, B. ; Millberne, Cullompton, Devon.
 1951 LABELLE, R. ; 832 Beaubien Street East, Montreal, P.Q., Canada.
 1929 LAIDLAY, J. C. ; Holmwood, Perth, Scotland.
 1951 LAKE, Dr. F. B. ; The White House, 5 Portsmouth Road, Kingston-on-Thames.
 1937 LAKE, GEORGE D., M.B.O.U. ; Audreys, Burghfield Common, Reading, Berks.
 1945 LAMB, A. ; Mount Pleasant, Hexham, Northumberland.
 1954 LANCASTER, M. C., Ph.D., B.Sc., M.R.C.V.S. ; 76 Westwood Road, Bemerton Heath, Salisbury.
 1954 LANCE, V. P. ; Route No. 3, Denison, Texas, U.S.A.
 1954 LANG, Dr. E. M. ; Zoologischer Garten, Basel, Switzerland.
 1950 LANGBERG, WALTHER ; Tudskaervej 22, Copenhagen, Vanløse, Denmark.
 1919 LAW, SATYA CHURN, M.A., Ph.D., F.Z.S., F.N.I., M.B.O.U. ; 50 Kailas Bose Street, Calcutta, India.
 1952 LAWRENCE, C. C. ; Normacot, Cressing, Braintree, Essex.
 1955 LAWRENCE, K. J. ; The Street, Hatfield Peverel, Nr. Chelmsford, Essex.
 1930 LAX, J. M. S. ; Southfield, Crook, Co. Durham.
 1949 LAZZERONI, IVO ; 5034 Templeton Street, Los Angeles 32, Calif., U.S.A.
 1955 LEE, C. ; Harbour Cottage, Crabmarsh, Wisbech, Cambs.
 1953 LEE, N. A. ; 31 Abbeyville, South Shore, Blackpool, Lancs.
 1946 *LEMON, Miss E. K. ; c/o 1007 Government Street, Victoria, B.C., Canada.
 1952 LESTER, J. W., F.L.S., F.Z.S. ; c/o Zoological Society of London, Regent's Park, N.W. 1.
 1949 LEVER, H. ; 14 April Street, C-on-M., Manchester 13.
 1955 LEWIS, Mrs. Eda ; P.O. Box, Tipton, Pa., U.S.A.
 1946 LEWIS, W. O. ; Milnsbridge, Bicton Heath, Shrewsbury.
 1955 LIEVENS, D. ; Kaaiweg 44, Moerzeke, by Dendermonde, Belgium.
 1952 LIMBERG, HANS ; Harscampstrasse 62, Bad Aachen, Germany.
 1951 LINDSAY, A. ; 422 Lake Street, Oak Park, Illinois, U.S.A.
 1953 LINFIELD, W. F. ; Grans. Cottage, Thakeham, Nr. Storrington, Sussex.
 1951 LIPPENS, LÉON ; Den Hul, 43 Boslaan, Knocke-Le Zoute, Belgium.
 1952 LITTLECHILD, B. ; 4 Rye Mead Cotts, Rye Road, Hoddesdon, Herts.
 1941 LIVERMORE, JOHN W. ; The Old Stone House, P.O. Box 41, West Redding Conn., U.S.A.
 1952 LOAR, J. A. ; 8 Coleridge Road, Wyken, Coventry.
 1953 LOGAN, F. ; 21 Plantagenet Street, Nottingham.
 1954 LONSDALE, Mrs. E. M. ; Grove House, Stapleford Abbots, Romford, Essex.
 1951 LOUWMAN, P. ; Dierenpark Wassenaar, Rijksstraatweg 667, Wassenaar Holland.
 1927 LOWE, Rev. J. R., M.A. ; The Vicarage, Coln St. Aldwyns, Cirencester Glos.

- 1951 LUCAS, V. J. ; Park House, West Rasen, Market Rasen, Lincs.
 1955 LUKE, J. A. ; Bona Lodge, Aldourie, Inverness.
 1947 LUMSDEN, Lt.-Col. WILLIAM V. ; Sluie, Banchory, Aberdeenshire, Scotland.
 1952 LUTHER, H. M. ; 26 Park Crescent, Regent's Park, W. 1.
 1947 LYNCH, G., F.Z.S. ; 21 Sunnycroft Road, Hounslow, Middx.
 1954 LYNE, C. E. M. ; Dunfield House, Fairford, Glos.
- 1948 MACK, H. G. ; c/o Gilson Manufacturing Co., Ltd., Guelph, Ontario, Canada.
 1948 MACKENSEN, Dr. RICHARD S. ; Yardley, Pa., U.S.A.
 1954 MACLEOD, N. ; White Lodge, Strathpeffer, Scotland.
 1953 MACPHIE, D. J. ; Hazel Cottage, Petersham, Surrey.
 1953 MACRAE, Miss H. I. ; 15 Forbes Road, Edinburgh 10, Scotland.
 1947 MAITLAND, Miss M. C. ; North Lodge, Goring-by-Sea, Sussex.
 1950 MALLIN, A. ; 34 Willingsworth Road, Ocker Hill, Nr. Wednesbury, Staffs.
 1954 MANKEL, W. ; Bahnhofstrasse 44, Dörnigheim am Main, Germany.
 1954 MANTLE, P. ; 14 Parker Road, Ely, Cardiff.
 1954 MARLER, C. J. S. ; Pheasants Nest, Weston Underwood, Olney, Bucks.
 1950 MARSHALL, J. C. ; 25 Stevens Road, Sandiacre, Notts.
 1930 MARTIN, A. ; 26 Somerford Road, Reddish, Stockport.
 1951 MASON, H., M.C., F.Z.S. ; 2 Dunstan Road, London, N.W. 11.
 1952 MASON, L. M. ; Talbot Manor, Fincham, King's Lynn, Norfolk.
 1935 MATTHEWS, Mrs. F. E. ; Glandore, New Park Road, Cranleigh, Surrey.
 1929 MAXWELL, P. H., F.Z.S., M.B.O.U. ; c/o Zoological Society of London, Whipsnade Park, Nr. Dunstable, Beds.
 1913 *MAXWELL-JACKSON, Miss M., F.Z.S. ; Percy House, Scotton, Knaresborough, Yorks.
 1922 *MAYER, F. W. SHAW, C.M.Z.S. ; c/o Mr. R. W. Tebb, Lae, New Guinea, via Australia.
 1955 MEES, G. F. ; Rijksmuseum van Natuurlijke Historie, Leiden, Holland.
 1935 MERCK, Dr. WOLFGANG ; Rupert Strasse 55, Hamburg-Nieusteden, Germany.
 1950 MERRY, C. ; 89 King William Street, Tunstall, Stoke-on-Trent.
 1951 MIDDLETON, G. ; 50 Carter Street, Uttoxeter, Staffs.
 1953 MIDDLETON, L. G. ; The Old Vicarage, Church Town, Nr. Garstang, Lancs.
 1951 MIDWINTER, J. ; 62 Oxford Road, Burford, Oxford.
 1953 MIGHELL, E. R. ; 106 Selborne Road, Southgate, N. 14.
 1951 MILLER, H. E. ; "Westwater," Tedburn St. Mary, Nr. Exeter, Devon.
 1950 MILLER, R. C. ; Standard Bank of South Africa, Ltd., Pietermaritzburg, Natal, S. Africa.
 1937 MILLIGAN, H. ; Upper Manor Farm, Leckford, Stockbridge, Hants.
 1951 MILLIGAN, I. B. ; 5 Silsey Avenue, Sale, Cheshire.
 1954 MILLINGTON, J. J. ; Barn Close, Bushby, Leicestershire.
 1951 MILNE, R. S. ; 18 Silverwell Street, Bolton, Lancs.
 1929 MILNES-COATES, Sir CLIVE, Bart., F.Z.S. ; 13 Hyde Park Gate, London, S.W. 7.
 1937 MILTON, Capt. STANLEY F. ; 75 Portland Avenue, Gravesend, Kent.
 1952 MITCHELL, Mrs. F. G. ; Clapton Manor, Kettering, Northants.
 1943 MITCHELL, HAROLD A. ; 2 Stuart Street, East Kilbride, Lanarkshire.
 1952 MITCHELL, R. E. ; 49 Woodlands Avenue, Church End, Finchley, N. 3.
 1950 MITCHELL-FOX, Mrs. E. M. ; Tresawle, Wheatridge Lane, Livermead, Torquay, Devon.

- 1951 MOFFIT, C. ; 3 Hartley Avenue, Monkseaton, Northumberland.
 1926 MOODY, A. F. ; Lilford, Oundle, Peterborough.
 1949 MOODY, H. ; 91 Barbara Avenue, Uppingham Road, Leicester.
 1950 MOORE, J. T. ; 17 Gold Street, Wellingborough, Northants.
 1928 MOORE, ROBERT T. ; The Moore Zoological Laboratory, Box 388,
 Occidental College, Los Angeles 41, California, U.S.A.
 1955 MORELL, Mrs. G. ; 29 Linden Gardens, London, W. 2.
 1954 MORGAN, Mrs. A. ; 38 Inham Road, Chilwell, Notts.
 1949 MORNLY, C. J. ; 52 Draycott Place, London, S.W. 3.
 1931 MORRISON, A. R. G., F.Z.S., M.B.O.U. ; c/o Chartered Bank of India,
 Australia and China, Kuching, Sarawak.
 1947 MOSFORD, FRANK ; The Elms, Churton Heath, Saughton, Nr. Chester.
 1927 MOTT, B. ; Grey Mill Farm, Wootton Waven, Nr. Henley-in-Arden.
 1929 MOTTERSHEAD, G. S., F.Z.S. ; Zoological Gardens, Chester.
 1923 MOUNTAIN, Capt. WALTON ; Groombridge Place, Groombridge, Kent.
 1949 MUNDEN, N. J. ; (Present address unknown.)
 1952 MURRAY, G. T. ; 4235 Ohio Street, Gary, Indiana, U.S.A.
 1947 MURRAY, H. ; Bracken, Cornsland, Brentwood, Essex.
 1952 MURRAY, J. B. ; c/o Messrs. Bovril, Ltd., 123 Chaussée de Mons, Brussels,
 Belgium.
 1939 MURRAY, R. J. ; 12 High Road, Camberwell, E. 6, Victoria, Australia.
 1949 MURRAY, SAMUEL, F.Z.S. ; 18 Somerset Gardens, Lewisham, S.E. 13.
 1926 *McCULLAGH, Sir CRAWFORD, Bart. ; Lismara, Whiteabbey, Belfast,
 N. Ireland.
 1950 MCGOWAN, H. ; 13 Robertson Way, Ash, Aldershot, Hants.
 1953 McHALE, J. P. ; 1526 W. Highland Avenue, Chicago 26, Ill., U.S.A.
 1954 McKEE, Mrs. K. M. ; 2603 Maple Crescent, Rossland, B.C., Canada.
 1950 McKENZIE, D. L. ; The New Inn, Winchelsea, Sussex.
 1955 McLACHLAN, G. R. ; Museum and Snake Park, 28 Bird Street, Port
 Elizabeth, S. Africa.
 1955 McLAUGHLIN, T. J. ; The Bungalow, Gordon Ave., Foxrock, Co. Dublin,
 Eire.
 1955 McLEAN, A., B.Sc., M.R.C.V.S., D.V.H. ; Bellevue Zoological Gardens,
 Belfast, N. Ireland.
- 1954 NELSON, A. ; 301 N. Rural Drive, Monterey Park, Calif., U.S.A.
 1952 NEWELL, J. P., Ph.C., M.P.S.I., D.Opt., M.I.O.S. ; 4 Pearse Street,
 Athlone, Ireland.
 1930 NEWILL, D. S., M.D. ; Box 634, Connellsville, Pa., U.S.A.
 1953 NEWLAND, R. A. ; 93 Arne Avenue, Parkstone, Dorset.
 1931 NICHOLSON, N. ; Edenvale, 16 Weardale Place, Stockton-on-Tees.
 1955 NICOLAI, Dr. J. ; Max Planck-Institut, Buldern üb. Dülmen/Westf.,
 Germany.
 1947 NICOULLAUD, J. G. ; 48 rue Descartes, Chinon, France.
 1954 NIX, Mrs. F. ; 1007 N. Zangs Blvd., Dallas 8, Texas, U.S.A.
 1954 NIXON, T. F. E. ; "Honeystones," Leverington, Wisbech, Cambs.
 1947 NOBLE, R. A. W. ; Little Grange, Canterbury Road, Margate, Kent.
 1948 NOORDZIJ, J. H. ; Burg. Visserpark 13, Alphen a/d Rijn, Holland.
 1949 NOREEN, GEORGE W. ; Route 3—Box 219, Bothell, Washington, U.S.A.
 1939 NORRIS, KENNETH A., F.Z.S., M.B.O.U. ; Elmstone, 45 Highfield Road,
 Purley, Surrey.
 1951 NOURSE, DUDLEY ; "Content," 4 Earlswood Place, Durban North, Natal
 South Africa.

- 1953 OAKES, J. H. ; 93 Robinet Road, Beeston, Nottingham.
- 1955 OLIVER, C. ; 135 Mill Lane, Denton, Nr. Manchester.
- 1950 OLIVIER, GEORGES, F.Z.S., M.B.O.U. ; 6 rue Ch.-Flavigny, Elbeuf (Seine Inférieure), France.
- 1955 OLLEY, C. A. ; 163 Avon Road, Chelmsford, Essex.
- 1945 OLSON, LEO B. ; 835 South First Street, De Kalb, Illinois, U.S.A.
- 1952 OLSSON, C. J. ; Erik Dahlbergsgatan 19, Gothenborg, Sweden.
- 1955 O'NEILL, JORGE ; Largo do Conde Barão 5, Lisbon, Portugal.
- 1954 ORSATTI, P. ; 97 Beaver Avenue, Toronto, Ontario, Canada.
- 1928 OSTREHAN, CLEMENT ; Kington Rectory, Worcester.
- 1947 OVEREND, Miss EUNICE ; 49 Alexandra Road, Frome, Somerset.
- 1953 OVERLÄNDER, D. ; Austrasse 17, Bad Honnef/Rhein, Germany.
- 1953 OZANNE, H. W. H. ; Istamboul Lodge, La Ramée, St. Peter Port, Guernsey.
- 1944 PALMELLA, His Excellency the Duke of, F.Z.S. ; 116 Rua Escola Polytechnica, Lisbon, Portugal.
- 1954 PALMER, A. E. ; 11 Hurd Street, Newton Park, Port Elizabeth, S. Africa.
- 1955 PALSSON, W. F. ; Halldorsstadir, Laxardal, via Husavik, Iceland.
- 1950 PANTING, PETER J., B.Sc. ; "Belle Vue," Main Street, Goodwick, Pembs.
- 1954 PARIS, P. G. ; Boskenna, St. Buryan, Cornwall.
- 1950 PARREN, R. J. ; Avenue House, Tenmpon Road, King's Lynn, Norfolk.
- 1952 PARTRIDGE, P. B. ; 164 Waverley Avenue, Twickenham, Middx.
- 1934 PARTRIDGE, W. R., F.Z.S. ; The Bungalow, Lower Haseler, Nr. Evesham, Worcs.
- 1952 PATTEN, R. A., B.V.Sc. ; "Dunromin," Windsor Road, Kellyville, N.S.W., Australia.
- 1949 PAYN, Major W. H., M.B.E., M.B.O.U. ; Hartest Place, Bury St. Edmunds, Suffolk.
- 1950 PAYNE, C. M. ; The Malt House, Barford, Warwick.
- 1955 PAYNE, Mrs. C. M. ; The Malt House, Barford, Warwick.
- 1951 PEARSON, J. C., A.R.S.G.B. ; Southern Kinta Consolidated Ltd., Southern Kampar Section, Tanjong Tualang, Perak, Malaya.
- 1946 PEARSON, RAYMOND ; 179 West Auckland Road, Darlington, Co. Durham.
- 1951 PEASE, Mrs. S. ; R.R.I., Dolgeville, New York, U.S.A.
- 1940 PEAT, RODERICK M., F.Z.S. ; 11 Ironmonger Lane, London, E.C. 2.
- 1954 PEDERSEN, J. P. ; Bernstorffsvej 10, Odense, Denmark.
- 1954 PERRY, Miss E. G. ; Cy Press, Stapleford Abbots, Romford, Essex.
- 1953 PERRY, J. A. W. ; 14 New Way, Pinelands, Nr. Cape Town, S. Africa.
- 1954 PHILLIPS, Miss R. F. ; 488 Shirley Road, Hall Green, Birmingham, 28.
- 1935 PHIPPS, Mrs. L. N., F.Z.S., M.B.O.U. ; The Manor House, Minster Lovell, Oxon.
- 1955 PIGG, N. ; 3427 McCormick Avenue, Hollywood, Ill., U.S.A.
- 1954 PILCHER, R. E. M., M.A., F.R.C.S. ; The Meadows, 39 Spilsby Road, Boston, Lincs.
- 1934 PITT, W. S. ; Wildwood, Silverdale Avenue, Walton-on-Thames, Surrey.
- 1924 PLATH, K. ; 114 S. East Avenue, Oak Park, Ill., U.S.A.
- 1947 PODMORE, C. R. ; 49 Greystones Grange Road, Ecclesall, Sheffield 11.
- 1949 POHLE, HORST C. ; Fichtestrasse 7, Bayreuth, Germany.
- 1937 POLAK, Dr. A. C. ; Spoorstraat 15, Amersfoort, Holland.
- 1925 POLTIMORE, Lady ; Benwell, P.O. Box 6, Bindura, Southern Rhodesia.
- 1955 PONTING, A. G. ; North Owersby, Lincoln.
- 1920 PORTER, SYDNEY, F.Z.S., M.B.O.U. ; The White Gates, 149 Stenson Road, Derby.

- 1914 POTTER, BERNARD E., M.B., M.R.C.S., L.R.C.P., F.Z.S. ; 39 Devonshire Place, London, W. 1.
- 1954 POWERS, D. W. ; 2224 Roosevelt, Fort Worth 6, Texas, U.S.A.
- 1928 *PRESTWICH, ARTHUR A. ; 61 Chase Road, Oakwood, N. 14.
- 1951 PRIEST, Dr. A. A. ; 434-6 Acheson Building, 2131 University Avenue, Berkeley 4, Calif., U.S.A.
- 1954 PRIP, F. ; Sorrentovej 48, Copenhagen S., Denmark.
- 1953 PUNTER, W. H. ; c/o 14 Nant Eirin, Tynybryn, Tonyrefail, Glam.
- 1953 PYE, Brigadier RANDALL, D.S.O. ; Avenings Farm, Daneshill, Sussex.
- 1948 QUENBY, H. F. ; "Standard" House, High Street, Baldock, Herts.
- 1913 QUINCEY, R. S. DE Q., F.Z.S. ; The Vern, Bodenham, Hereford.
- 1953 RAATH, J. F. ; P.O. Box 63, Langlaagte, Transvaal, S. Africa.
- 1948 RABBIN, HILBERT J., I.S.O., F.Z.S. ; 33 Kingsway, Wembley.
- 1954 RAEVEN, Dr. M. A. ; Houwelingenplantsoen 8, Vught, 's Hertogenbosch, Holland.
- 1949 RAGAN, CALVIN ; P.O. Box 7, Bell, California, U.S.A.
- 1954 RANDAU, G. ; Avenida Rui Barbosa 500, Recife, Pernambuco, Brazil.
- 1943 RANKIN, Lieut.-Col. N., F.R.G.S., F.R.P.S. ; House of Treshnish, Calgary, Isle of Mull, Argyll, Scotland.
- 1950 RATH, JOSEF ; Moosburger Strasse 3, Pfaffenhofen-Jlm (Oberbayern), Germany.
- 1939 RAVEN, WILLIAM H., O.B.E. ; The Mill House, Newbold-on-Stour, Nr. Stratford-on-Avon.
- 1948 RAY, Mrs. V. E. ; Hulwating Tea Estate, Amhuri P.O., Assam, India.
- 1950 RAYMAEKERS, L. ; 71 Avenue Molière, Brussels, Belgium.
- 1947 REAY, J. H. ; Cranmore, The Close, Hillingdon, Middx.
- 1955 REDMAN, D. S. ; Bleak Hall, Biggleswade, Beds.
- 1954 REED, Miss A. ; 38 Huntley Street, Toronto, Ontario, Canada.
- 1953 REED, Mrs. H. F. ; 2312 So. Buckner Blvd., Dallas, Texas, U.S.A.
- 1950 REES, D. W. ; 79 King's Road, Canton, Cardiff, S. Wales.
- 1950 REES, F. A. D. ; Leckford, Stockbridge, Hants.
- 1939 REID, Miss MARION C. ; c/o Messrs. John Reid, Ltd., Walt Street, Newcastle, N.S.W., Australia.
- 1951 REID-HENRY, D. M. ; 43 West View Drive, Woodford Green, Essex.
- 1951 RENDELL, R. G. ; 60 Guinions Road, High Wycombe, Bucks.
- 1952 RETIEF, J. E. ; 56 Lincoln Street, Bellville, Cape Province, South Africa.
- 1953 REYNAL, E. ; -221 East 49th Street, New York 17, N.Y., U.S.A.
- 1946 RICARDO, Mrs. MARY C. ; Audreys, Burghfield Common, Reading, Berks.
- 1950 RICH, JOSEPH W. ; 1073 West 11th Street, San Pedro, Calif., U.S.A.
- 1954 RICHARDSON, Mrs. A. O. ; 1317 Poplar Street, Abilene, Texas, U.S.A.
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- 1955 RICHARDSON, J. ; 106 Bransty Road, Whitehaven, Cumberland.
- 1953 RIDLEY, C. T. ; Birdwarren Farm, Varsity View P.O., 3812 Hedley Avenue, Charleswood, Manitoba, Canada.
- 1954 RIGGE, J. S. ; Old Broadgate, Millom, Cumberland.
- 1948 RIIS-HANSEN, KAI ; Nørre Alle 75, Glostrup, Denmark.
- 1937 RIPLEY, S. DILLON, Ph.D., M.B.O.U. ; Kilravock, Litchfield, Conn., U.S.A.
- 1935 RISDON, D. H. S. ; The Dudley Zoological Society, Dudley, Worcs.
- 1943 ROBERTSON, Dr. A. R. ; P.O. Box 95, Kroonstad, O.F.S., South Africa.
- 1947 ROBINSON, B. E. ; Field House, Blackborough Road, Reigate, Surrey.

- 1951 ROBINSON, G. E. ; 487 Little Horton Lane, Bradford.
- 1953 ROBINSON, H. A. ; 903 Arcadia Avenue, Arcadia, Calif., U.S.A.
- 1927 ROBISON, A. W. ; 125 Maiden Lane, San Francisco 8, Calif., U.S.A.
- 1955 ROKOSKY, EMIL J. ; Racine Zoological Park, 2131 North Main Street, Racine, Wis., U.S.A.
- 1951 ROLPH, W. ; Undley Lodge, Lakenheath, Suffolk.
- 1945 ROONEY, JAMES P., M.B.O.U. ; 1514 South 12th Avenue, Yakima, Washington, U.S.A.
- 1946 ROOTE, CYRIL C. ; 116 Cardinal's Walk, Scraptoft Lane, Leicester.
- 1954 ROSE, W. H. ; 44 Sapcote Road, Hinckley, Leics.
- 1954 ROSSITER, Dr. N. A. ; Colonial Mutual Bldg., West Street, Durban, Natal, S. Africa.
- 1953 ROTERS, J. ; Elk Lumber Co., Box 170, Temiskaming, Quebec, Canada.
- 1954 ROTHWELL, Dr. K. G. ; 519 Saffron Lane, Leicester.
- 1954 ROUILLARD, J. V. ; P.O. Box 72, Stanger, Natal, S. Africa.
- 1951 ROYDEN, T. W. E. ; Broad House, Fleggburgh, Norfolk.
- 1954 RUBNER, H. ; Kunstmühle, Erlangen-Bruck, Bavaria, Germany.
- 1954 RUDD, A. H. ; 22 Church Hill, Purley, Surrey.
- 1952 RUDKIN, F. H., Jr. ; 3rd and Fillmore Streets, Fillmore, California, U.S.A.
- 1950 RUSSELL, BARNABAS, F.R.S.A., F.Z.S., F.R.H.S. ; 20 Bucklersbury, Hitchin, Herts.
- 1954 RUTGERS, A. ; Boeckenrode, Joppe, Holland.
- 1927 RYCROFT, Mrs. V. ; (Present address unknown.)
- 1954 SALMON, W. G. ; Angley Lake, Cranbrook, Kent.
- 1951 SALTERI, D., F.Z.S. ; 44 Montrose Terrace, Edinburgh 7.
- 1955 SANDERSON, S., 33 Cardinal Avenue, Boreham Wood, Herts.
- 1953 SANDS, W. M., F.Z.S. ; Silver Birches, Farrar Lane, Adel, Leeds 16.
- 1945 SAUNDERS, RONALD, F.Z.S. ; Regent Parade, Sycamore Road, Amersham, Bucks.
- 1950 SAWDEN, M. ; "The Gardens," Uddens, Nr. Wimborne, Dorset.
- 1949 *SAWYER, R. C. J., F.Z.S. ; 226 Haggerston Road, London, E. 8.
- 1954 SCAMELL, K. M., O.B.E. ; 1 Marine Crescent, North Drive, Great Yarmouth.
- 1953 SCAMELL, Mrs. K. M. ; 1 Marine Crescent, North Drive, Great Yarmouth.
- 1954 SCHENCK, Mrs. E. ; 58 Coleridge Road, Walthamstow, E. 17.
- 1949 SCHNEIDER, P. E. ; 5113 No. Acacia Street, San Gabriel, Calif., U.S.A.
- 1955 SCHOMBERG, G. ST. GEORGE ; 102 Drayton Gardens, S.W. 10.
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- 1954 SCHUSTER, Dr. H. ; 3 rue Maurice Barrès-Saint-Avoid, Moselle, France.
- 1914 SCHUYL, D. G. ; Kralingscheweg 332, Rotterdam O, Holland.
- 1934 SCOTT, A. H., F.Z.S. ; Abbotswell, Frogham, Fordingbridge, Hants.
- 1938 *SCOTT, PETER, C.B.E., D.S.C., M.A., F.Z.S., M.B.O.U. ; The New Grounds, Slimbridge, Gloucestershire.
- 1952 SCOTT, R. A. ; 1 Lambton Road, Broadmeadow, N.S.W., Australia.
- 1928 SCOTT-HOPKINS, Capt. C., F.Z.S. ; Knoll House, Shiplake, Oxon.
- 1955 SCRAGG, D. G. ; 4 Drakefield Road, Liverpool 11.
- 1951 SEAGO, J., F.Z.S. ; Hall Common, Ludham, Norfolk.
- 1954 SEARLE, Dr. K. C. ; Windsor House, Victoria, Hong Kong.
- 1951 SEARS, JOHN L. ; Reel Hall, Shamley Green, Guildford, Surrey.
- 1953 SEWELL, W. A., F.R.Z.S. ; Pleasley Road, Skegby, Sutton-in-Ashfield, Notts.

- 1951 SHAFFER, B. ; 3006 South West Temple, Salt Lake City, Utah, U.S.A.
 1954 SHARPE, W. G. ; 6 High Street, Flitwick, Bedford.
 1932 SHEARING, A. P. ; The Aviaries, Foxwarren Park, Cobham, Surrey.
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 1953 SHOLAR, Dr. N. P., D.D.S. ; Box 265, Mooresville, N.C., U.S.A.
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 1947 SLADER, W. T., J.P. ; Pentillie, Honiton Road, Exeter.
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 1954 SMART, T. E. ; Castlemead, Tenbury Wells, Worcs.
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 1954 SMITH, Miss E. M. S. ; 98 Castelnau, London, S.W. 13.
 1941 SMITH, E. WILFORD ; "Lynwood," 15 Kingsway Road, Leicester.
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 1947 SMITH, KENNETH J. ; Paignton Zoological Gardens, Paignton, Devon.
 1955 SMITH, R. G. ; 247 Gladstone Avenue, Wood Green, London, N. 22.
 1952 SMITH, STANLEY ; 79 Anson Road, Singapore 2.
 1952 SMITH T. ; 46 Millburn Street, Crook, Co. Durham.
 1917 SMITH, W. PROCTER, F.Z.S. ; Bexton House, Knutsford, Cheshire.
 1953 SNAZLE, H. A., M.B.E. ; Chessington Zoo, Ltd., Leatherhead Road,
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 1946 SOANES, ARTHUR C. ; The Fishery Inn, Elstree, Herts.
 1950 SOAR, E. R. ; 233 Long Lane, Hillingdon, Middx.
 1952 SPEED, Mrs. D. A. ; 925 Clinton Avenue, Fresno, California, U.S.A.
 1951 SPEEL, C. ; Saxenburgerweg 9, Bloemendaal, Holland.
 1954 SPENCE, J. M. ; c/o P.E. Museum and Snake Park, 28 Bird Street, Port
 Elizabeth, S. Africa.
 1952 SPENCE, T., M.R.C.V.S. ; Dunbog, Newburgh, Fife, Scotland.
 1953 SPILSBURY, D. T. ; 12 Upper Howsell Road, Malvern Link, Worcs.
 1923 SPRAWSON, Professor Evelyn, M.C., D.Sc., M.R.C.S., F.Z.S. ; Cranford,
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 1923 SPURWAY, N. B. ; "The Hermitage," Oadby, Leicestershire.
 1939 SQUIRE, E. O. ; Bassmead, St. Neots, Hunts.
 1954 STAPLES, H. A. ; 210 Broadway, Chico, Calif., U.S.A.
 1924 STARK, J. ; c/o Mrs. F. W. Boote, 6 Percy Road, Handbridge, Chester,
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 1954 STEPHAN, H. C. ; "Hathersage," Gordons Road, Somerset West, C.P.,
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 1953 STEVENS, A. ; 56 Gwencole Crescent, Braunstone, Leicester.
 1932 STEVENS, RONALD ; Walcot Hall, Lydbury North, Shropshire.
 1953 STIVEN, H. ; 27 Park View, Lochgelly, Fife, Scotland.
 1952 STODDART, R. W. ; Grey Lynn, Flatts Lane, Normanby, Nr. Middles-
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 1922 STOKES, Capt. H. S., M.C., F.Z.S. ; Longdon, Rugeley, Staffordshire.
 1953 STONE, M. B., Jr. ; Martin's Pond Road, Groton, Mass., U.S.A.
 1929 STONEY, Miss I. ; Central Lodge, 55 Central Hill, Upper Norwood,
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- 1928 STORMONTH-DARLING, P. ; 7 Egerton Court, Harrington Road, London, S.W. 7.
- 1955 STRACHAN, Mrs. B. G. ; The Garden Cottage, Thornsflush, Cranleigh, Surrey.
- 1951 STRAIGHT, WHITNEY, C.B.E., M.C., D.F.C. ; The Aviary, Windmill Lane, Southall, Middx.
- 1948 STRANGE, FRANK E. ; P.O. Box 207, Redondo Beach, California, U.S.A.
- 1948 STRETCH, H. ; 119 Wilton Road, Salisbury. .
- 1955 STROLLO, J. J. ; Box 577, Hq. Far East Air Forces, A.P.O. 925, San Francisco, Calif., U.S.A.
- 1930 STROMBI, Miss DORA A. ; Eastbank House, Brechin, Angus.
- 1949 STRUTT, Hon. PETER A. ; Bentley Park, Ipswich, Suffolk.
- 1950 STURGIS, A. F. ; 740 Sansom Street, Philadelphia 6, Pa., U.S.A.
- 1952 SUNDSTRÖM, Miss BRITT-MARIE ; Östra Larmgatan 3, Gothenburg, Sweden.
- 1952 SUTTON, J. W. C. ; The Patch, Salthouse, Holt, Norfolk.
- 1938 SUTTON, PETER, M.R.C.V.S. ; 11 Culverden Park Road, Tunbridge Wells.
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- 1902**SWAN, J. A., F.Z.S. ; Hazel Mere, Rectory Lane, Sidcup, Kent.
- 1950 SWAN, Mrs. J. A. ; Hazel Mere, Rectory Lane, Sidcup, Kent.
- 1951 SWANEPOEL, P. ; Central Service Station, Warden Street, Harrismith, O.F.S., S. Africa.
- 1948 SYKES, JOSEPH ; 167 North High Street, Musselburgh, Scotland.
- 1955 TACK, J. ; Tyting Garage, St. Martha's, Guildford, Surrey.
- 1953 TAMBLYN, S. A. ; "Penlaurel," South Petherwyn, Launceston, Cornwall.
- 1946 TANCRED, P. H. ; 19 Hardy Street, Ashfield, Sydney, N.S.W., Australia.
- 1954 TATT, R. H. ; The Willows, Railway Road, Downham Market, Norfolk.
- 1946 TAYLOR, JAMES, M.B.O.U. ; Lower Hilcot, Withington, Cheltenham, Glos.
- 1952 TAYLOR, R. A., F.Z.S. ; 182 Lambeth Walk, London, S.E. 11.
- 1945 TAYLOR, T. G., M.A., Ph.D. ; 16 Derby Road, Caversham, Reading.
- 1954 TEAGLE, W. G. ; Flat 6, 2 The Paragon, Blackheath, S.E. 3.
- 1930 TEAGUE, P. W. ; Rowlestone, Teignmouth Road, Dawlish, Devon.
- 1954 TEAL, G. L. ; 1981 Sayles Blvd., Abilene, Texas, U.S.A.
- 1954 TEMBLETT, H. ; P.O. Box 37, Maseru, Basutoland, S. Africa.
- 1926 TENNANT, Hon. STEPHEN ; Wilsford Manor, Salisbury.
- 1952 THEAKER, J. N. ; The Grove, Swadlincote, Nr. Burton-on-Trent.
- 1949 THOMAS, A. E. ; Burnt House, Chigwell, Essex.
- 1931 THOMAS, F. E. ; Barnfield, Dunsfold, Surrey.
- 1949 THOMAS, RAY ; 600 Sarbonne Road, Bel-Air, Los Angeles 24, Calif., U.S.A.
- 1950 THOMPSON, LLOYD B. ; 2010 Cliff Avenue, North Burnaby, Vancouver, B.C., Canada.
- 1954 THORPE, J., F.R.E.S. ; Dean Cottage, Pleasant Style, Littledean, Gloucestershire.
- 1954 TIMMIS, W. ; c/o Mayfield Cottage, Hoole Village, Hoole, Chester.
- 1946 *TINSLEY, PATRICK C. ; Hurn Hall, Holbeach, Spalding, Lincs.
- 1946 *TINSLEY, WILLIAM G. ; The Poplars, Holbeach, St. Marks, Lincs.
- 1952 TOLLEMACHE, Major J. E. H., M.C. ; Helmingham Hall, Stowmarket, Suffolk.
- 1950 TONG, E. H. ; Zoological Society of London, Whipnade Park, Nr. Dunstable, Beds.

- 1955 TOPLIS, D. N. V. ; c/o A. R. Toplis, Esq., 5 The Ridgeway, Finchley, N. 3.
 1955 TOWNSEND, G. F. ; 94 Littledean Hill, Cinderford, Glos.
 1954 TRAYLER, Miss N. E. ; 20 Kensington, Bath.
 1951 TREVISICK, C. H., F.Z.S. ; Ilfracombe Zoo Park, Comyn Hill, Ilfracombe, North Devon.
 1952 TROUBRIDGE, Lady ; Middle Oakshott, Hawkley, Liss, Hants.
 1947 *TUCKWELL, DAVID ; Asliesk, Alves by Forres, Morayshire.
 1933 TUMA, F. L. ; Limhamnsvagen 12A, Malmö, Sweden.
 1939 TUNESI, A. W. ; Elmside, 93 Vicarage Road, Sunbury-on-Thames, Middx.
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 1930 *TURNER, WALTER H. ; 15 Sutherland Road, Chatswood, N.S.W., Australia.
 1955 TWELL, J. W. ; Caravan, Clay Lane, Marlow, Bucks.
 1954 TWYFORD, Lady IDA ; Wychwood Farm, Shermanbury, Nr. Horsham, Sussex.
 1934 TYEBJEE, ABDE AMIRUDIN SHALEBHOY ; Malabar Court, Ridge Road, Malabar Hill, Bombay 6, India.
 1954 TYRELL, T. H. ; Bridge House, Brydekirk, Annan, Dumfriesshire.
 1954 *ULLENS DE SCHOOTEN, C. A., F.Z.S. ; Les Bouleaux, Quatre-Bras, Crainhem, Brabant, Belgium.
 1955 UPTON, Mrs. P. V., M.B.O.U. ; Park Lodge, Margaretting, Ingatestone, Essex.
 1955 USHER, P. ; 47 Edinburgh Drive, Kirton, Boston, Lincs.
 1954 VADEN, J. M. ; 2533 S. 3rd Street, Abilene, Texas, U.S.A.
 1947 VALLEN, J. H. J. M., M.D. ; Antoniuslaan 105, Blerick-Venlo, Holland.
 1951 VAN APELDOORN, A. G. ; "Het Soerel," Heerde, Holland.
 1954 VAN DAM, G. TH. ; Zoo-Centrum, Aalten, Holland.
 1949 VAN DEN BERGH, WALTER, C.M.Z.S., C.M.R.Z.S.(Scot.) ; Société Royale de Zoologie d'Anvers, 26 Place Reine Astrid, Antwerp, Belgium.
 1953 VAN DEN BRINK, G., Jr. ; Soesterbergsestraat 111, Soest, Holland.
 1953 VAN DER MARK, R. R. P. ; De Kweekhoeve, Van Helvoortlaan 31, Woerden, Holland.
 1950 VAN DIJK, H. C. ; Fabriekstraat 6, Tilburg, Holland.
 1948 VAN DIJK, H. J. ; Animali, Eindhoven, Holland.
 1950 VAN DIJK, N. ; Bisschop Aelenstraat 50, Tilburg, Holland.
 1937 VANE, E. N. T., F.Z.S. ; Fairacre, Chiltern Road, Ballinger, Gt. Missenden, Bucks.
 1955 VAN GIJSEGEM, P. ; O.L. Vrouwlaan 108, Evere, Belgium.
 1934 VAN HEYST, A. F. C. A. ; No. 12, Plesmanlaan, Bussum, Holland.
 1950 VAN LEEUWEN, J. DOCTERS ; Hoveniersweg 37, Tiel, Holland.
 1955 VAN MAARION, W. ; Nelson Aviaries, 715-6th Street, Nelson, British Columbia, Canada.
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 1951 VAN WACHEM, R. H. ; Joh. Geradtsweg 44, Hilversum, Holland.
 1955 VELD, S. A. MAN IN'T ; "Eikenoord," Deventerstraat 494, Apeldoorn, Holland.
 1954 VERNON, M. S. ; 23 Osbaldeston Gardens, Gosforth, Newcastle-upon-Tyne, 3.
 1928 VIERHELLER, GEORGE P. ; St. Louis Zoological Park, St. Louis 10, Mo., U.S.A.
 1947 VINSON, MARK ; The Beeches Farm, Cowden, Edenbridge, Kent.

- 1954 VLEMMIX, H. P. ; H. Vlemmix' Vogel-en Dierenhandel, Bisschop Zwij-
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- 1936 VOY, Miss HILDA ; Lynchets, Longbridge Deverill, Warminster, Wilts.
- 1948 VUCOVICH, PAYSON ; 15731 Fargo Avenue, Hanford, California, U.S.A.
- 1948 WADDAMS, W. LAWSON ; 34 Thurlston Avenue, Sheldon, Birmingham 26.
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- 1947 WAIT, F. R., F.Z.S. ; Bridge House, Hemsby, Nr. Great Yarmouth, Norfolk.
- 1952 WAITE, J. ; 6 Attwood Street, Kidsgrove, Staffs.
- 1948 WAKEFIELD, Mrs. C. H. ; 139 Senic Drive, Palomar Park, Redwood City,
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- 1953 WALKER, N. S. ; Farthing Green, Farthing Green Lane, Stoke Poges,
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- 1936 WALLER, H., F.Z.S. ; Oldway, Pilgrims Way, Westhumble, Dorking,
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- 1951 WALLIN, Mrs. O. H. ; 11543-36 N.E., Seattle 55, Washington, U.S.A.
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- 1954 WALTER, C. N., F.S.A.A., M.B.O.U. ; 32 Stanley Avenue, Beckenham,
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- 1952 WARING, S. D. ; 13 Oakhill Road, Maghull, Nr Liverpool, Lancs.
- 1955 WARNER, H. G. ; 83 Sherbourne Road, Bushbury, Wolverhampton, Staffs.
- 1935 WARRE, Mrs. PHILIP ; Coppid Hall, Stifford, Essex.
- 1952 WASTELL, C. H. ; "Mon Abri," Stapleford Abbots, Essex.
- 1932 WATKINS, T. R. HOLMES ; Oronsay, The Ellipse, Griffithstown, Mon.
- 1953 WATSON, A. ; 24 River Street, Brechin, Angus, Scotland.
- 1950 WATSON, J. K. ; Doonholm, P.O. Box 757, Nairobi, Kenya Colony.
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- 1955 WAYRE, P. L. ; Reynolds Farm, Great Witchingham, Norwich.
- 1954 WEALE, L. C. P. ; 13 Overton Road, Southgate, N. 14.
- 1933 WEAVER, GEORGE, F.Z.S. ; 77 Offmore Road, Kidderminster, Worcs.
- 1929 WEBB, P. B. ; Dunadry, Co. Antrim, N. Ireland.
- 1935 WEBBER, LEONARD C. ; 6 Grand View Parade, Epping, N.S.W., Australia.
- 1937 *WEBER, ORLANDO F., Jr. ; (Present address unknown.)
- 1950 WEINMAN, Major A. N., M.B.E., C.M.Z.S. ; The Zoological Gardens of
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- 1942 WENKE, FRANCIS L. ; P.O. Box 581, Ferndale, Washington, U.S.A.
- 1947 WEST, DAVID ; 209 N. 18th Street, Montebello, California, U.S.A.
- 1932 WHARTON-TIGAR, Mrs. N., F.Z.S. ; The Highlands, Manston, Nr.
Ramsgate.
- 1951 WHATLEY, E. C. ; Wonston Manor Cottages, Sutton Scotney, Nr.
Winchester, Hants.
- 1950 WHEATLEY, Mrs. GRACE, R.W.S., F.Z.S. ; Heathfield House, Windmill
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- 1947 WHEELER, Mrs. T. E., F.Z.S. ; Lynwood, Onslow Avenue, Cheam, Surrey.
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- 1955 *WHITE, Dr. LAWRENCE F. ; 1345 North Vermont Avenue, Los Angeles 27,
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 1951 WILLMOTT, J. D. ; Box 488, Mount Dora, Florida, U.S.A.
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 1950 WINCH, R. F. ; Queen Charlotte Fisheries, Ltd., 610 Bidwell Street, Vancouver, B.C., Canada.
 1953 WINDECKER, Dr. W. ; Zoologischer Garten, Riehler Strasse 173, Köln-Riehl, Germany.
 1954 WINGATE, W. A. ; De Lunn Buildings, Jewry Street, Winchester, Hants.
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 1953 WOOD, G. ; 8 Forge Meads, Wittersham, Nr. Tenterden, Kent.
 1951 WOOD, Miss G. J. ; Church Cottage, Tarvin, Nr. Chester.
 1945 WOOD, H. WALLACE ; Oak Hall, Hythe, Kent.
 1940 WOOD, J. A. ; 68½ Pitt Street, Sydney, N.S.W., Australia.
 1955 WORKMAN, F. ; 28 Park Road, Enfield, Middx.
 1903** WORKMAN, WILLIAM H., F.Z.S., M.B.O.U. ; Lismore, Windsor Avenue, Belfast.
 1950 WRIGHT, S. A., F.Z.S. ; 59 Ashridge Gardens, Palmers Green, N. 13.
 1934 YEALLAND, JOHN, F.Z.S., M.B.O.U. ; The Zoological Society of London, Regent's Park, N.W. 1.
 1956 YOUNG, D., M.R.C.V.S. ; Beech Cottage, East Shaw Lane, Midhurst, Sussex.
 1954 YOUNG, O. H., M.B.E. ; 58 Goodwood Avenue, Hutton, Essex.
 1932 YOUNGER, Mrs. L. ; 244 Cranmer Court, Sloane Avenue, S.W. 3.
 1953 ZABALDANO, J. B. ; 15702 E. Nelson Avenue, Puente, Calif., U.S.A.

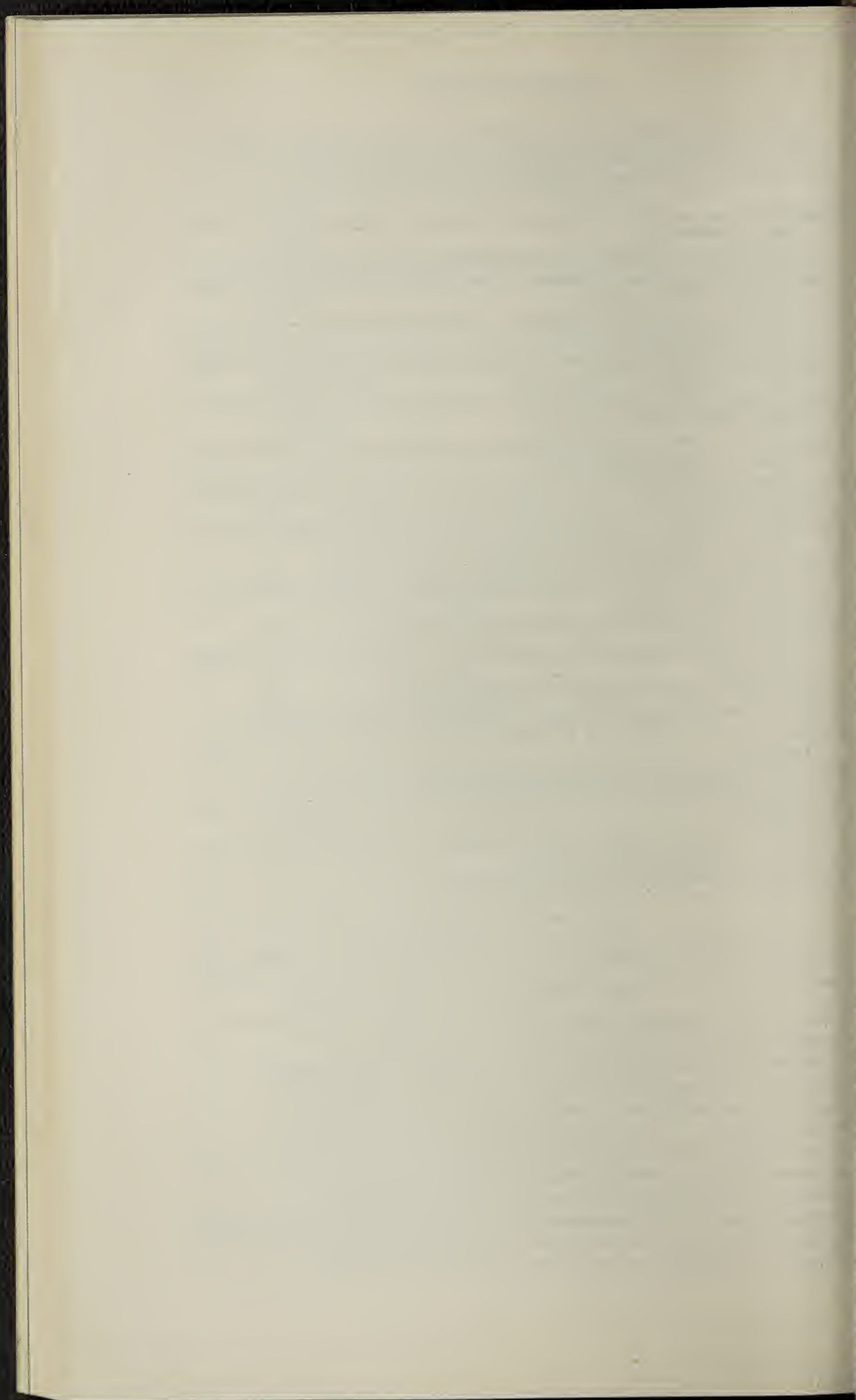
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- BURFIELD, C. C. ; 12 Forest Avenue, Black Forest, Adelaide, South Australia.
- CLYMA, M. ; 28 Avenue Road, Frewville, South Australia.
- DUNSTONE, Dr. L. J. ; 30 Malvern Avenue, Malvern, South Australia.
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- HOGG, G. ; 49 Wallis Street, Parkside, Adelaide, South Australia.
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- PHILLIPS, A. ; Burns Avenue, Hazelwood Park, South Australia.
- SEPPELT, OSCAR ; 57 Northumberland Street, Tasmore, Adelaide, South Australia.
- SEWELL, H. S. ; 14 Stannington Avenue, Toorak East, Adelaide, South Australia.
- WRIGHT, R. ; Langdon Avenue, Clarence Park, South Australia.



Rules of the Avicultural Society

Last amended, 9th November, 1955.

1.—The name of the Society shall be THE AVICULTURAL SOCIETY, and its object shall be the study of British and foreign birds in freedom and in captivity. Poultry, Pigeons, and Canaries shall be outside the scope of the Society. The year of the Society, with that of each volume of the Society's Magazine, which shall be known as the AVICULTURAL MAGAZINE, shall commence with the month of January and end on the 31st December following.

2.—The Avicultural Society shall consist of Ordinary, Life, Honorary Life Members, and Honorary Fellows, and the last shall be restricted in number to ten, and be elected by the Council.

3.—The Officers of the Society shall be elected, annually if necessary, by Members of the Council in the manner hereinafter provided, and shall consist of a President, one or more Vice-Presidents, a Secretary-Treasurer, an Assistant Secretary, an Editor, and a Council of fifteen Members. The President, Vice-Presidents, Secretary-Treasurer, Assistant Secretary, and Editor shall be *ex officio* Members of the Council.

4.—New Members shall be proposed in writing, and the name and address of every person thus proposed, with the name of the Member proposing him shall be published in the next issue of the Magazine. Unless the candidate shall within two weeks after the publication of his name in the Magazine, be objected to by at least two Members, he shall be deemed to be duly elected. If five Members shall lodge with the Secretary objections to any candidate he shall not be elected, but the signatures to the signed objections must be verified by the Scrutineer. If two or more Members shall object to any candidate the name of such candidate shall be brought before the Council at their next meeting, and the Council shall have power to elect or to disqualify him from election.

5.—Each Member shall pay an annual subscription of £1, to be due and payable in advance on the 1st of January in each year; and, on payment of the subscription shall be entitled to receive all the numbers of the Society's Magazine for the current year. Life Member's fee, £15.

6.—Members intending to resign their membership at the end of the current year of the Society are expected to give notice to the Secretary before the 1st of December, so that their names may not be included in the "List of Members", which shall be published annually in the January number of the Magazine.

7.—The Magazine of the Society shall be issued on or about the first day of every month, and forwarded, post free, *to all the Members who shall have paid their subscriptions for the year ; but no Magazine shall be sent or delivered to any Member until the annual subscription shall have reached the hands of the Secretary-Treasurer.* Members whose subscriptions shall not have been paid as above by the first day in November in any year shall cease to be Members of the Society, but may be readmitted, at the discretion of the Council, on payment of the annual subscription.

8.—The President, Secretary-Treasurer, Assistant Secretary, and Editor shall be elected for a term of five years, and, should a vacancy occur, it may be temporarily filled by the Executive Committee (see Rule 10). At the expiration of the term of five years in every case it shall be competent for the Council to nominate the same officer, or another Member, for a further term of five years, unless a second candidate be proposed by not less than twenty-five Members of at least two years' standing, as set forth below.

In the November number of the Magazine preceding the retirement from office of the President, Secretary-Treasurer, Assistant Secretary, and Editor, the Council shall publish the names of those members whom they have nominated to fill the vacancies thus created ; and these Members shall be deemed duly elected unless another candidate or candidates be proposed by not less than fifteen Members of at least two years' standing. Such proposal, duly seconded and containing the written consent of the nominee to serve, if elected, in the capacity for which he is proposed, must reach the Secretary on or before the 15th of November.

9.—The Members of the Council shall retire by rotation, three at the end of each year of the Society (unless a vacancy or vacancies shall occur otherwise) and three other Members of the Society shall be recommended by the Council to take the place of those retiring. The names of the three Members recommended shall be printed in the November number of the AVICULTURAL MAGAZINE. Should the Council's selection be objected to by fifteen or more Members, these shall have power to put forward three other candidates, whose names, together with the signatures of not less than fifteen Members proposing them, must reach the Secretary *by the 15th of November.* The names of the six candidates will then be printed on a voting paper and sent to each Member with the December number of the Magazine, and the result of the voting published in the January issue. Should no alternative candidates be put forward, in the manner and by the date above specified, the three candidates recommended by the Council shall be deemed to have been duly elected. In the event of an equality of votes the President shall have a casting vote.

If any Member of the Council does not attend a meeting for two years in succession the Council shall have power to elect another Member in his place.

10.—Immediately after the election of the Council that body shall proceed to elect three from its Members. These three, together with the Secretary-Treasurer, Assistant Secretary, and Editor, shall form a Committee known as the Executive Committee.

The duties of the Executive Committee shall be as follows :—

(i) In the event of the resignation of any of the Officers during the Society's year, to fill temporarily the vacancy until the end of the year. In the case of the office being one which is held for more than one year (e.g. Secretary-Treasurer, Assistant Secretary, or Editor) the appointment shall be confirmed by the Council at its next meeting.

(ii) To act for the Council in the decision of any other matter that may arise in connection with the business of the Society.

The decision of any matter by the Executive to be settled by a simple majority (three to form a quorum). In the event of a tie on any question, such question shall be forthwith submitted by letter to the Council for their decision.

The Executive shall not have power

(i) To add to or alter the Rules ;

(ii) To expel any Member ;

(iii) To re-elect the Secretary-Treasurer, Assistant Secretary, or Editor for a second term of office.

It shall not be lawful for the Treasurer to pay any account exceeding £10 unless such account be duly sanctioned by another Member of the Executive.

It shall be lawful for the Secretary-Treasurer or Editor to pledge the Society's credit for a sum not exceeding £100.

Should a Member wish any matter to be brought before the Council direct such matter should be sent to the Secretary with a letter stating that it is to be brought before the Council at their next meeting, otherwise communications will in the first place be brought before the Executive.

A decision of a majority of the Council, or a majority of the Executive endorsed by the Council, shall be final and conclusive in all matters.

11.—The Editor shall have an absolute discretion as to what matter shall be published in the Magazine (subject to the control of the Executive Committee). The Secretary and Editor shall respectively refer all matters of doubt and difficulty to the Executive Committee.

12.—The Council (but not a committee of the Council) shall have power to alter and add to the Rules, from time to time, in any manner they may think fit. Five to form a quorum at any meeting of the Council.

13.—The Council shall have power to expel any Member from the Society at any time without assigning any reason.

The Society's Medal

(Instituted 1st November, 1896)

RULES

The Medal may be awarded at the discretion of the Council to any Member who shall succeed in breeding, in the United Kingdom, any species of bird which shall not, in the opinion of the Council, be known to have been previously bred in captivity in Great Britain or Northern Ireland. Any Member wishing to obtain the Medal must send a detailed account for publication in the Magazine within about eight weeks from the date of hatching of the young, and furnish such evidence of the facts as the Council may require. The Medal will be awarded only in cases where the young shall live to be old enough to feed themselves, and to be wholly independent of their parents. The question of awarding a Medal for the breeding of local races or sub-species of species that have already been bred shall be at the discretion of the Council. No Medal can be given for the breeding of hybrids.

The account of the breeding must be reasonably full so as to afford instruction to our Members, and must appear in the AVICULTURAL MAGAZINE before it is published or notified elsewhere. It should describe the plumage of the young, and *be of value as a permanent record of the nesting and general habits of the species*. These points will have great weight when the question of awarding the Medal is under consideration.

In every case the decision of the Council shall be final.

The Medal will be forwarded to each Member as soon after it shall have been awarded as possible.

The Medal is struck in bronze (but the Council reserve the right to issue it in *silver* in very special cases) and measures $2\frac{1}{2}$ inches in diameter. It bears on the obverse a representation of two birds with a nest containing eggs, and the words "The Avicultural Society—founded 1894". On the reverse is the following inscription: "Awarded to [name of recipient] for rearing the young of [name of species], a species not previously bred in captivity in the United Kingdom."

CANDIDATES FOR ELECTION

- F. W. BEHRENT, No. 2 Line, R.D., Wanganui, New Zealand. Proposed by G. Rowland Hutchinson.
- D. C. BUCKINGHAM, "Rest Harrow," Shenley, Herts. Proposed by Lady Twyford.
- R. W. CROWE, Grey Tree, South Nutfield, Surrey. Proposed by A. A. Prestwich.
- R. DIGBY, 47 West View Drive, Woodford Green, Essex. Proposed by D. M. Reid-Henry.
- Miss E. G. GANNER, 149 Holland Park Avenue, London, W. 11. Proposed by Miss S. I. Hobday.
- Dr. H. D. GROEN, Rijksweg 252, Haren Gr., Holland. Proposed by Miss K. Bonner.
- J. E. HARRIS, Wood Lawn, Uttoxeter, Staffs. Proposed by Miss K. Bonner.
- R. W. HAWKINS, Conservatory—Aviary, West Park, Pittsburgh 12, Pa., U.S.A. Proposed by Miss K. Bonner.
- Mrs. ROSE HUGHES, 928 Teetshorn Street, Houston 9, Texas, U.S.A. Proposed by A. A. Prestwich.
- D. O. HYDE, Yamsay Ranch, Chiloquin, Oregon, U.S.A. Proposed by A. H. Isenberg.
- Dr. T. M. LEISER, Berg en Dalseweg 84, Nijmegen, Holland. Proposed by G. de Goederen.
- JOHN McGRATH, Brownstown House, Curragh, Co. Kildare, Eire. Proposed by R. G. Kirkham.
- G. J. C. PORTER, 62 New Park Avenue, Palmers Green, N. 13. Proposed by A. A. Prestwich.
- K. RUSSELL, "Rafso Cottage," Outwell, nr. Wisbech, Cambs. Proposed by J. T. Cooper.
- Miss G. SALTER, Primley House, Paignton, Devon. Proposed by Captain H. S. Stokes.
- Dr. EDMOND A. SCHLESSELMAN, M.D., 450 Blackstone Avenue, Fresno, Calif., U.S.A. Proposed by A. A. Prestwich.
- L. SHEPPERSON, The Chestnuts, March Cambs. Proposed by W. B. Frostick.
- DON SNYDER, 315 Linden Walk, Lexington, Kentucky, U.S.A. Proposed by Karl Plath.
- Dr. E. L. TAYLOR, C.B.E., "The Mu", Brook, Albury, nr. Guildford, Surrey. Proposed by Dr. S. B. Kendall.
- D. VERMET, Landgoed "Zoomland," Bergen op Zoom, Holland. Proposed by H. C. van Dijk.
- Mrs. C. H. WASTELL, "Mon Abri," Stapleford Abbots, Romford, Essex. Proposed by C. H. Wastell.
- G. WATERTON, F.R.S.E., M.B.O.U., 5 Charlotte Square, Edinburgh 2. Proposed by A. A. Prestwich.
- W. WATMOUGH, Lintonholme, Thackley, Bradford, Yorks. Proposed by B. H. Dulanty.

NEW MEMBERS

The seven Candidates for Election in the November–December, 1955, number of the *Avicultural Magazine*, were duly elected members of the Society.

READMITTED

Dr. J. H. J. M. VALLEN, Antoniuslaan 105, Blerick, Holland.

DONATIONS

(Coloured Plate Fund)

	£	s.	d.
J. SPEDAN LEWIS	5	0	0
J. A. SWAN	3	3	0
S. MURRAY	2	0	0
A. H. ISENBERG	1	15	0
H. COWLEY	1	2	0
W. L. EAVES	1	2	0
Lady POLTIMORE	1	2	0
J. W. CLEMITSON	1	1	0
D. M. COWARD	1	0	0
G. BANKS	1	0	0
Mrs. J. DALZIEL BIRRELL	1	0	0
SAUL C. CORWIN	15	0	

MEMBERS' ADVERTISEMENTS

The charge for Members' advertisements is ONE PENNY PER WORD. Payment must accompany the advertisement, which must be sent on or before the 15th of the month to A. A. PRESTWICH, 61 CHASE ROAD, OAKWOOD, N. 14. All members of the Society are entitled to use this column, but the Council reserves the right to refuse any advertisements they consider unsuitable.

WANTED

Tame hen Jay, cock Rock Pigeon, and cock Red-eyed Dove.—DEREK GOODWIN, Toft, Monks Road, Virginia Water, Surrey.

Hen Barraband ; also hen Barnard, or will exchange hen for cock bred 1953.—G. E. ROBINSON, 487 Little Horton Lane, Bradford 5, Yorkshire. Tel. : Bradford 71993.

Hen Blue-rumped Malay Parrot ; also Blue Masked Lovebirds, pair or odd birds.—J. CLEMITSON, 25 St. Pauls Gardens, Whitley Bay, Northumberland.

Cock Tragopans—£70 will be paid F.O.B. airport. Double this amount in pairs.—FRED STURGIS, 740 Sansom Street, Philadelphia 6, Pa., U.S.A.

Golden-mantled Rosella hen, Mealy Rosella hen, and Bourke cock.—Mrs. J. M. ROTHWELL, Cromhill, Saffron Lane, Leicester.

EMPLOYMENT

AVIARY KEEPER WANTED.—Some experience of breeding and rearing birds desirable. Carpentry, photography, etc. an asset. Wages according to age and experience. House available, pension scheme. Write giving full particulars of age, education, and qualifications and enclosing testimonials to Dr. THORPE, University Department of Zoology, Downing Street Cambridge.

WATERFOWL RINGS

Members are reminded that the Society's special blue rings are always available. All Waterfowl in collections, both public and private, should carry them.

Size.		Price per dozen, post free.	
		s.	d.
2-3	Teal	3	3
3	Wigeon	3	6
4	Mallard, Pintail, etc.	3	9
4-5	Smaller geese	4	6
5	Greylag	5	3

Requests for rings should be addressed to the Hon. Secretary, Avicultural Society, c/o Zoological Society of London, Regent's Park, London, N.W. 1, from whom all particulars can be obtained.

POST-MORTEM EXAMINATIONS

Attention is drawn to the following rules :—

Rule 1.—A short account of the illness should accompany the specimen. All birds to be sent as fresh as possible to Mr. W. Lawrence, The Zoological Society of London, Regent's Park, London, N.W. 1.

Rule 2.—A fee of 10s. and a stamped addressed envelope MUST be enclosed with the bird.

Rule 3.—No body or skin of any bird will be returned under any circumstances whatever.

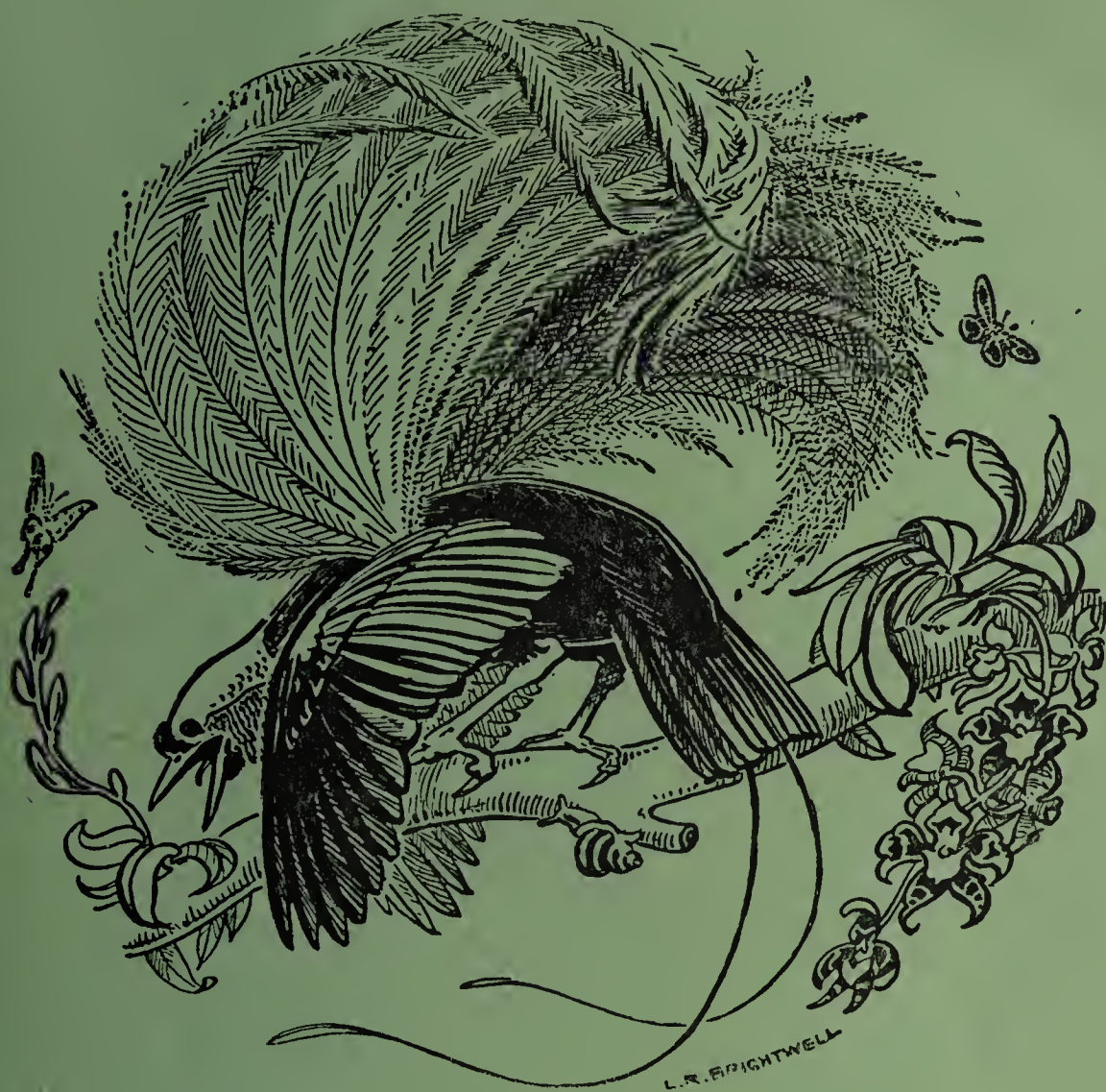
ARTHUR A. PRESTWICH,
Hon. Secretary.

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Net. Hunt.

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AVICULTURAL MAGAZINE



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MARCH-APRIL
1956

THE AVICULTURAL SOCIETY

Founded 1894

President : D. Seth-Smith, Esq.

Hon. Secretary and Treasurer : A. A. Prestwich, 61 Chase Road,
Oakwood, London, N. 14.

Assistant Secretary : Miss Kay Bonner.

Membership Subscription is £1 per annum, due on 1st January each year, and payable in advance. Life Membership £15. Subscriptions, Changes of Address, Names of Candidates for Membership, etc., should be sent to the Hon. Secretary.

THE AVICULTURAL SOCIETY OF AMERICA

President : M. Jean Delacour.

Secretary-Treasurer : Mrs. Hazel M. Kersh, 3061 Adriatic Avenue, Long
Beach 10, Calif., U.S.A.

The annual dues of the Society are \$3.25 per year (foreign dues \$3.75 or £1 7s.), payable in advance. The Society year begins 1st January, but new members may be admitted at any time. Correspondence regarding membership, etc., should be directed to the Secretary.

THE AVICULTURAL MAGAZINE

The Magazine is published bi-monthly, and sent free to all members of the Avicultural Society and Avicultural Society of America. Members joining at any time during the year are entitled to the back numbers for the current year on the payment of subscription. All matter for publication in the Magazine should be addressed to :—

The Editor : Miss Phyllis Barclay-Smith, 51 Warwick Avenue, London
W. 9. Telephone : Cunningham 3006.

The price of the Magazine to non-members is 5s., post free, per copy, or £1 10s. for the year. Orders for the Magazine, extra copies and back numbers (from 1911) should be sent to the publishers, Stephen Austin & Sons, Ltd., Caxton Hill, Watlington Road, Hertford, England. Telephone : Hertford 2352/3/4.



GOLDEN-WINGED PARRAKEET.

AVICULTURAL MAGAZINE

THE JOURNAL OF THE AVICULTURAL SOCIETY
AND THE AVICULTURAL SOCIETY OF AMERICA

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MARCH—APRIL, 1956

GOLDEN-WINGED PARRAKEET

(*Brotogeris chrysopterus chrysopterus*)

By A. A. PRESTWICH (Southgate, England)

The genus *Brotogeris*, according to Peters (1937), contains seven species with eight subspecies. Of immediate interest is *B. chrysopterus* with three races :

Brotogeris chrysopterus chrysopterus (Linnaeus)..

Golden-winged Parrakeet.

Brotogeris chrysopterus tuipara (Gmelin).

Tui para or Golden-fronted Parrakeet.

Brotogeris chrysopterus chrysosema Sclater.

Golden Parrakeet.

Friedmann (1948) has since described a fourth race, *B. c. tenuifrons*, Rio Negro Parrakeet, which appears to be intermediate between *B. c. chrysopterus* and *B. c. tui para*.

Distribution. The range of *B. c. chrysopterus* is " Eastern Venezuela and the Guianas, south to the north bank of the lower Amazon ", and of *B. c. tui para*, with which in the past it has so often been confused, " South bank of the lower Amazon from the Tapajóz to Pará, and through the coastal forest belt to north-eastern Maranhão " (Peters).

There is considerable variation in size in the species of the genus *Brotogeris* ; the largest being the well-known All-green Parrakeet (*B. tirica*) 10·0 inches, whereas the smallest are the Tui (*B. st. thoma st. thoma*) and the Golden-winged (*B. c. chrysopterus*), both 6·8 inches.

In 1758 Edwards (1760) painted a parrakeet which he says had been " the property of one of the Lords of the Admiralty, and was given to me by a servant after it died ". He believed it had not hitherto been figured or described and applied the names " Golden-winged Parrakeet ", " La Perrique aux Ailes d'Or ", and " *Psittacus minor alis aureis* ". The plate is satisfactory apart from the fact that it by no means does justice to the fine golden-orange primary-coverts.

Brisson (1760) is the next to notice this species, giving descriptions in French and Latin, presumably based on Edwards.

The present specific name was bestowed by Linnaeus in 1766, when he named it *Psittacus chrysopterus*, at the same time wrongly giving its habitat as India. From then onwards most of the late eighteenth and early nineteenth century ornithologists included the species in their works—their observations, however, all too often merely being repeated from Edwards.

Buffon (1779) calls it "La Perruche aux ailes d'or" and gives due credit to Edwards, but otherwise says nothing of importance: Latham (1781, 1790, 1822) gives condensed versions of Edwards: Levaillant (1801) includes two plates of "La Perruche à tache souci", male and female; that of the male is quite good, but the female, here stated to lack the orange wing patch is, of course, depicted without, also the under wing-coverts are shown as of a brightish blue and the two central tail feathers as blue—this last also applies to the plate of the male; Levaillant tells us it is very common in Cayenne, and that large numbers are sent to Europe, he thinks it the more surprising therefore that the species is disregarded by ornithologists: Shaw (1812) gives credit to and relies on Edwards: Vieillot (1817, 1823) does likewise: Kuhl (1820) can do no better than give a description and name five museums possessing skins of *Psittacus Sosove*: Swainson (1820–21) gives a small, inferior plate of *Psittacus Cayennensis*, Cayenne Golden-winged Parakeet, and quotes Levaillant that the female is entirely green: Lesson (1831), "Psittacule a tache souci," and Wagler (1832), *Sittace tuipara*, jun., add little or nothing of importance.

Dr. Finsch (1868) regarded *B. chrysopierus* merely as the juvenile of *B. tuipara*. In 1878, however, the Zoological Society of London received a living *chrysopterus*, followed in 1879 by a *tuipara*. Sclater (1879) was then able to show beyond doubt that the two were sub-specifically distinct. There is a marked similarity, but *chrysopterus* differs from *tuipara* in having a narrow frontal magin and chin-spot of dark brown instead of orange; it is also somewhat smaller. The female is similar to the male; immature the primary-coverts are said to be green.

Very little appears to have been written on the wild life of this Parakeet. Schomburgk (1848) states it is to be found throughout British Guiana. It flies about near the coast in large flocks, and is very fond of settling on the flowering *Erythrina* trees growing in the coffee plantations, and greedily eating the flowers. Its nest is in the holes of trees, and two to four eggs are said to form the clutch.

Lloyd (1895), *Some Guiana Parrots*, gives a note which may or may not apply: "Several species of *Brotogeris* are also reported from the colony, but they are small green birds hardly distinguishable from each other except in size, and not very interesting from the æsthetic

point of view. They generally lay their eggs in the deserted nests of wood ants (termites)."

This is a rarely imported species, practically unknown to aviculturists. It has been represented in the collection of the Zoological Society of London on at least two occasions. The first was received in exchange in April, 1878, and a second by purchase in November, 1888, since when there have probably been others. Thorough search has failed to reveal the names of any private aviculturists who have owned the Golden-winged.

The coloured plate is from a painting by D. M. Reid-Henry of one of four examples lately in the "*Darenth-Hulme*" collection. They arrived at the end of October, 1952, and were apparently the sole survivors of a large number shipped by a very inexperienced trader in the same case as several Amazon Parrots.

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THE NESTING OF THE MALACHITE SUNBIRD

By SYDNEY PORTER (Derby, England)

Searching through avicultural literature one finds little or no reference to the nesting of Sunbirds in captivity, except for a single instance in 1912 when a pair of Purple Sunbirds nested in the aviaries of a Mr. Brook, at Hoddam Castle, in Scotland. This nesting was unsuccessful as the eggs were infertile.

Possibly one of the main reasons why no attempt was made to induce the birds to reproduce themselves was that in pre-war days (before 1940) few hens were imported compared to the number of males. Being such small, modest, and inconspicuous creatures, so utterly different to their gorgeous mates, importers had not bothered to bring them into the country.

Now a good many pairs of Sunbirds are imported by sailors on Merchant Navy ships, who find that a few pairs brought over at a time prove a lucrative business. In this way quite a few rare species are to be picked up if one knows the contacts.

Unfortunately some of the men finding that the birds will survive on honey alone, use this without bothering about the usual sunbird nectar mixture, it being less trouble, and though the birds may arrive in good condition, not many survive more than a few weeks after importation.

A sailor with ideas of getting rich quickly brought over (or at least tried to) 50 Malachite cocks in a single cage . . . when I saw the few which eventually reached these shores they looked like animated bits of oily rags . . . After a week or two only one poor thing survived and lived for over a year, during which time every effort was made to aid its recovery, but in vain.

In the old days most people seemed to think these birds frail and delicate creatures needing a high temperature and much care. Actually few birds are easier to keep if certain rules are kept, and few are longer lived.

Since I found a way to propagate large quantities of small flies I thought there would be little difficulty in getting Sunbirds to reproduce themselves. With that object in view a small range of aviaries was built with warmed inner shelters . . . but alas for the weakness of human nature, before the Sunbirds arrived on the scene the aviaries were inhabited by other species. However, two aviaries were set aside in the end for their intended inmates, a pair of Malachites and a pair of Amethysts.

As usual, the males treated their mates with the brutality which seems inherent in the nature of male Sunbirds. The hens were chased, chided, bullied, and beaten, and many times I have had

rescue them from imminent death. At first a few flight feathers of the males' wings were clipped but this made no difference. When the flights were heavily cut the males would stand by the food pots and keep their mates from feeding. Even putting two food receptacles in made little difference, as the males sprang from one to another. If this failed they would take up a stance by the opening between the outside and inside of aviary and shelter and keep the hens outside. Many times the little hen Malachite would hide under the newspapers which covered the floor of the aviary shelter to get away from her wrathful spouse. Often she would come up to me and indicate that she wanted to feed, and I had to wait with her mate perched a foot or two away, his body quivering with rage all the while, only to knock her down as soon as I left.

The cock Amethyst would chase his mate around the outside aviary with such rapidity that one only saw a misty circle, so terrific was their speed. After this had gone on for what seemed an endless time the hen would drop on to the ground exhausted, when she would be seized upon and nearly buffeted to death.

When the males cannot catch their mates they set up an extremely loud shrill and scolding chatter during the whole of daylight. This is apt to be very fraying to one's nerves. Fortunately my aviaries are far enough away from the house so that one can't hear them. At last the pairs had to be separated, as it seemed that nothing would deter the males from eventually killing the hens.

The male Malachite is one of the few Sunbirds which goes into an eclipse plumage out of the breeding season. He moults his brilliant green and takes on a dress very similar to the hen except he retains his long tail and has some green on the wing-coverts. When he returns to his nuptial plumage there seems to be no moult. I have kept many males in cages during the transition time and not a single feather has been dropped.

Gradually the shining, metallic green spreads over the whole of the plumage. When handled there is no sign of the greyish feathers with which the bird has been clothed. One can only assume that there is a colour change in the feathers as there most certainly is with Delamere's Giant Whydah, for one can see the black pigment passing up the shaft of the feathers and gradually diffusing over the whole of the feather.

When the male bird had assumed his breeding plumage and begun displaying the hen was put back into his aviary, when he at once went into an ecstatic and frenzied display, but in between this exhibition he still chivvied her. The display of the Malachite Sunbird is rather ludicrous; after dashing about at an incredible speed he takes up an attitude rather reminiscent of the postures created by the Victorian taxidermists when they fashioned their "stuffed" birds, which under

a glass shade were the ornaments of the drawing-room of that age. The head is thrown back with the long bill at right-angles to the back, the tail is also raised parallel to the bill, and the wings held out from the body though not spread. The long tail is swung like the pendulum of a metronome, with the same clockwork rhythm. During this time the bird pours out a very loud, sweet song very much like that of a Wren and equally out of proportion with the size of the bird. During this period, though not always, the brilliant yellow pectoral plumes, normally concealed, are brought into view and spread like two fans on each side of the breast. This posing attitude is assumed many hundreds of times throughout the day.

During the courtship the little hen would pluck up courage to beg her mate to feed her, but I have never seen him do so, he usually drives her away. As the season advanced she seemed less frightened of him.

At the beginning of May the hen was observed to be carrying bits of fibre in her beak, and one day I noticed what appeared to be the nucleus of a nest in a clipped privet bush about 3 feet from the ground. There were a few fibres and dead leaves placed vertically in an opening about in the middle of the bush. Various upholsterer's materials were procured . . . coconut fibre, short black horse hair (if given in long lengths birds usually hang themselves with this), cotton wool, down, lint, wadding, and the fine black hair-like roots of maidenhair fern which the gardener was then repotting ; but what pleased the bird most was kapoc, the beautiful silky down from the seed pods of an African tree which the birds no doubt use in a natural state.

The hen went into an ecstasy of joy when this was put in the aviary and upon seizing pieces she flew round and round in mad delight, letting bits go and then darting after them again and chasing pieces blown about by the wind. After the first frenzied delight died away she commenced with tremendous energy to build the nest and at intervals of from 10 to 20 seconds took alternate bits of kapoc and fern root or fibre to the nest. She seemed to do no weaving or building in the ordinary sense but her manner of work seemed to be a vigorous "tucking-in" of the materials. At first a solid structure about the size and shape of a pint basin on its side was made, there being no shape or indication that it was to be a nest. Eventually, as the hen worked on, an opening appeared in the middle, and in time the nest became a large sausage-shaped structure with a hole at one end, and when completed in about a fortnight's time it had a kind of porch over the entrance and what might be described as a long "beard" below, a mixture of kapoc, coconut fibre and fine dried grass and fern root.

On putting my finger into the entrance hole I found the nest wa

pouch shaped inside and beautifully warm and downy. This nest was rather loose in composition as the birds had not enough cobwebs to bind it together on the outside as they do in a wild state. I tried to gather cobwebs, but this was a difficult task as it was early in the season. A kind friend said I could go and gather cobwebs from one of his out-buildings, in which there were a great many. So, armed with little forks cut from bamboo bushes, I collected a great many. Alas, these were old and dusty and when concentrated after the collection, they appeared very black, and the hen refused to have anything to do with them. Fearing that if we had a downpour of rain the nest might become waterlogged, I took the precaution of putting a very large sheet of plate glass over the part of the aviary where the nest was. This was a good thing, for one night after the hen had been sitting about a week or more we had a very heavy downpour which lasted about twelve hours, and had the nest not been protected it would have collapsed. This made one realize what a wise precaution the binding together of the nest with cobwebs is, as this not only holds the structure together but also makes a waterproof covering. The silk used in Africa by Sunbirds comes from huge spiders' webs and is much stronger and thicker than any found in this country. In fact a few dozen strands twisted together are almost impossible to break.

No Sunbird's nest I saw in Southern Africa was anything like the one made by my bird. They were usually purse shaped structures hung by a rope of spiders' web from the ends of branches at a good height, stuck over with dead leaves, moss, and lichen, and often ornamented with paper or bits of cloth. One I found was trimmed with bits of fine lace the bird had collected from a veranda where the farmer's wife did needlework.

The male Malachite took not the slightest interest in the nest building and always ignored the hen's requests for food. By the demeanour of the hen and her "pregnant" look, I thought an egg was laid on the night of 24th May and another on the night of 26th May, which is the normal clutch. But one day, when the pair were both in the inner shelter where the food is kept, I ventured to put my finger in the nest and found there was only one egg. Of course, owing to the shape of the nest, it was quite impossible to see the egg, and to have got it out would have meant seriously damaging the structure. However, even in a wild state sometimes only one egg is laid. This must indicate that this Sunbird has few if any natural enemies, and is not to be wondered at as few birds have a swifter flight. The cock seems to fly at a prodigious speed and in a way resembles a great, green dragon fly; in fact when trying to catch this bird in an aviary this resemblance seems very real, especially as the wings make almost the same heavy buzzing as a dragon fly does when it has flown into a room and is trying to escape.

Though about 10 inches long the contour of the male is so elegant and beautifully streamlined that it could be passed through a large finger ring ; I can think of no other bird so beautifully sleek and slim, but this is only when it is in perfect health.

There are several other species of Sunbirds found in Kenya, but they lack the beauty of the South African bird. They are darker in colour and lack the beautiful golden scintillation and very trim shape, this is mainly because the tails are longer and not stiff like the other bird, in fact some have the central tail feathers almost as long and flexible as those of the Pin-tailed Whydah when in nuptial plumage.

About the food on which my Sunbirds are fed ; there have been many nectar mixtures advocated but one evolved by my friend Mr. Fred Logan, of Nottingham, seems to be the best, and on this food I have never lost a Sunbird except through accident. In regard to this food, for the morning mixture I mix two teaspoons each of Mellin's and Horlick's Food into a paste with water, then add two dessert-spoons of pure *English* honey (this is most essential as imported honey has preservatives in it which are harmful to the birds), a small portion of "Yeastrel" or Marmite about the size of a small pea, and this is dissolved in a pint of hot water ; when the mixture has gone cool a few drops of "Abidec" are added. For the afternoon mixture one dissolves in a pint of hot water two dessert-spoons of Nestle's Milk (Sweetened), two teaspoons of Mellin's Food, and one dessert-spoon of English honey. Larger quantities can be made and kept in a refrigerator and fed to the birds as wanted, but it must have the chill taken off before it is put in the cages or aviaries. My birds have flourished exceedingly since I used this mixture, and quite a few have shown signs of nesting. When in an outdoor aviary (with a heated shelter) I find live food of great benefit. This is produced by taking old buckets and half filling with rotten fruit, banana skins, grapefruit peel, etc., and fish heads, and covering the bucket with wire netting. Soon one has a constant supply of small and large flies ; needless to say my aviaries are not near the house. Once I used to hang small all-wire cages up in the aviaries with fish heads in them, but the birds used to put their long bills through the wire and with their long tongues lick these unsavoury objects, so I thought it better to substitute the buckets. I have tried to breed fruit flies for some of my Sunbirds which are in cages in the birdroom, but this has never been successful.

After the egg was laid I searched through all the ornithological literature in my library on the birds of South Africa, especially the *Monograph of the Sunbirds*, but there is no mention of the incubation period. Perhaps this is not to be wondered at as the eggs, owing to the structure of the nest, are not visible to the ordinary onlooker and it would be very difficult to find out just when the young had

hatched, both from the shape of the nest and the position it was in. The nearest I could find was 12 days for *Zosterops* which are supposed to be allied to the Sunbirds.

The little hen sat steadily and was not frightened off the nest by anyone approaching, though she was usually off to greet me when the morning food was taken round.

The cock took up his stance in some branches above the nest, which is probably a natural thing for him to do in a wild state, to drive off enemies or to give warning to the hen on the approach of danger. He was very annoyed when she left the nest for any time, and tried to drive her back. At the approach of anyone, even a stranger, she never came off the nest, but just put her head out of the entrance hole, though only the end of the long curved beak was visible owing to presence of the porch above the opening, and the nest only being about three feet high, but she saw all that went on.

By giving two extra days to that of the incubation of the *Zosterops*, the egg should have hatched on 9th June. From that date until the 12th the hen seemed restless and came off the nest more frequently. On the 12th, before setting off for the day to the Chester Zoo with Mrs. Belle Benchley, of the San Diego Zoo, who was then my guest, I felt in the nest and found the egg stuck to the bottom. What caused this I do not know, whether it was the excess of moisture or the bird having been "taken short" in the nest, I don't know. However, I took the egg out and broke it and found a fully-developed young one inside, but dead.

During the first two weeks of that June (1954) we had the wettest weather on record during that period for fifty years. The meteorological authorities said that sometimes an inch of rain fell in a night; not being very well up in the mathematics of the M.O. I would not like to dispute this, but judging by otherwise empty buckets which seemed to have about half-filled during the night, I should have said at least 6 inches had fallen! Whether it was the cold or dampness that caused the young one to die I don't know.

Of course the hen seemed rather lost when she found her egg gone, but by the 14th she was lining her nest with clipped downy duck feathers; this was unusual as she previously lined it with kapoc.

From the look of the bird it appeared that an egg was laid on the 17th, when I left home for the Avicultural Conference in London.

Arriving back on the Sunday I had rather a shock on seeing the hen. She looked dejected and utterly exhausted and made no movement when I went to pick her up. In fact she did not move at all for several hours. Wondering if this was due to her laying another egg, I felt in the nest and found that there were two eggs there. By late evening she was back on the nest again and in the morning seemed quite her usual self.

The hen sat steadily for fifteen days when I knew there must be something wrong, so I took the eggs out and broke them. One was clear and the inside was almost dried up, this was possibly due to a slight puncture of the egg in the early stages. The other contained a fully formed young one, but dead. The reason for this failure and the first must have been due to the weather, which was the worst I have ever known for June and early July. During the whole period there was not one single hot day. Most days were cold, wet, and windy, with the temperature ranging between 50° and 60° F. It was very sad, for the little hen did her best; she was a very close sitter and seldom left the eggs except to feed. Even when she did the cock followed her about and tried to drive her back on the eggs. During the period of incubation he took up a stance above the nest, and I think had there been any other birds in the aviary they would have fared badly had they dared to come around. The eggs appeared to be dull brown, darker towards one end, and very much like a warbler's, though on closer inspection they appear to be very finely speckled on a lighter ground.

However there is some slight consolation in the fact that I have a pair of breeding birds, and as Sunbirds are very long lived they may live to breed another day.

I have also another pair, the male of which is the finest Malachite I have ever seen, and was the kind gift of my friend Mr. George Bellars, of Durban. The upper parts of this bird are far more metallic golden than most other Malachites, and when sprayed with a fine sprayer becomes a brilliant copper-red all over.

Since the above was written the little hen was lost and "lost" is not meant as a euphemism for death. Her disappearance will always be No. 1 mystery connected with my aviaries. On returning home from a week-end spent in London I was greeted by the housekeeper, who delights in being the harbinger of catastrophes. Her first words on entering the house were: "One of your best birds has gone." On inquiring which one it was I was told that though she did not know the name, it was a "lady" bird and not a common hen bird!

Search as I might the hen Malachite was never found. One would have thought had she escaped from the aviary that she would have stayed around, for like most Sunbirds she was very tame, and there were plenty of flowers and insects about; the weather too was now warm.

I am sure the male bird cared less about the loss of his wife than I did.

Next year (1955) the very fine male was put out with his wife into a larger aviary than the other couple had. The hen started almost at once to build a nest. It was on the same lines as that built by the other pair, but bulkier. The position in a privet bush evidently did not suit the hen, for when it was finished she took it to pieces and rebuilt

it in another bush. She did this three times, and by then I was stricken down with an illness which prevented me from seeing the birds for almost a year. That year (1955) was really a Sunbird Year if ever there was one in this land of mists and fogs. We had day after day, week after week, and month after month of golden summer days. Had the first little hen Malachite been with us I am sure she would have reared young ones.

However, I am looking forward to the spring of 1956.

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BREEDING THE DERBYAN PARRAKEET

(*Palæornis derbyana*)

By C. M. PAYNE (Warwick, England)

I have always had a very soft spot for Derbyans, and this desire was tremendously increased after seeing the beautiful cock bird which Mr. Benjamin showed at one of the National Shows soon after the war. I realized, however, that they were rare in captivity, and I should be extremely lucky if a pair came my way. Since my first enthusiasm for the species I have kept a vigilant eye open for any reports.

One can imagine my elation when, through a good friend, I heard that a fancier had a pair for disposal ; a hurried telephone call and a more hurried journey soon found them in my possession. They were beautiful, in perfect plumage and condition—in fact absolutely glowing with health. This was rather surprising as they had been kept in a cage—a very roomy one, but nevertheless a cage—in a bird room for some years. With me they were placed in a large parrot cage, the intention being to turn them out into a new aviary during the spring of 1956.

As one can imagine, I often passed the cage and gave looks of approval—at last I had a true pair of Derbyans, a dream and long-held fancy had become a reality. Then one day I saw the cock regurgitate some food and feed the hen, and I wondered if this was the first sign of wanting to nest. As luck would have it, I had just placed some Gouldian Finches and a pair of Blossom-headed Parrakeets in a large aviary, and these were quickly removed and redistributed. Then into this aviary went the Derbyans, after I had put in a grandfather's clock type nesting-box. Much anxious watching from a distance took place at this time—I feared that their long, close imprisonment might have cramped the wings, but this was an unfounded fear, the birds flew straight and surely. Within days the hen was interesting herself in the nest and my hopes rose.

The birds were fed on the usual parrakeet mixture with rather more hemp than I usually allow. They also had green food, of which they ate quantities, and about half an apple each every other day. They were not as fond of soaked oats as the Australian parrakeets, although some were consumed.

After about three weeks of this treatment I went abroad for some ten days and on my return my aviary attendant told me he had looked into the nest and found three eggs—I wondered if he had looked into the right nest—but it was so, and there were three eggs. I was naturally delighted, but having kept an extensive collection of birds for more years than I care to remember, I was not unaware of the many obstacles one has to overcome twixt egg and chick.

Contrary to the habits of better aviculturists I often look into my parrakeet nests, and in fact do so continually throughout the breeding season. I am of the firm opinion that if one does it more or less continually, the birds are not disturbed in any way ; so I did look from time to time to see how matters progressed, and after about ten days I was convinced there were three fertile eggs. This, of course, is only one of the obstacles to which I have already referred.

I ought to have mentioned earlier that mating was witnessed on many occasions prior to the laying of the eggs.

The birds are very powerfully built and their beaks look good enough to demolish an aviary in quick time, so I put into the aviary substantial boughs of willow which, as most people know, is quite soft. Although the birds have chewed the boughs considerably, they have not touched the framework of the aviary and, in fact, are less destructive than birds many times smaller. They are also extremely tolerant of other birds, by necessity (which is another story), and for companions they have two pairs of Diamond Sparrows which have also reared young.

I was unable, because of my holiday, to keep an accurate check on the incubation period. I believe it to be 18 to 20 days, because, after what appeared to be this period, young were heard in the nest. Young Derbyans can be heard in the nest without putting an ear to the entrance hole ; they can be heard six yards away from about the first day of hatching.

The hen kept to the nest for the first ten days, being fed there by the cock bird. It was noted at the time that the birds were consuming large quantities of hemp. I simply had to take the risk of feather plucking, which often accompanies large proportions of hemp in the diet, and the birds were given hemp *ad lib.* Fresh green food in the way of lettuce, spinach, and groundsel were ever present, and a few ground nuts were added from time to time. Twice daily they were also given fresh white bread soaked in milk and squeezed fairly dry. Of this they ate about a substantial slice each day.

After ten days or so the hen left the nest frequently, when she was seen to be fed by the cock. During the performance the birds took up the same stance, and the hen kept up a call which reminded me distinctly of the caw of the hen Rook when being fed by the male.

Young were hatched and, being so generously fed by their parents, grew rapidly. At first the young Derbyans were clothed in a white down. The nest feather is a replica of the adults, but naturally some shades duller and lighter in tone with the exception of the head, which is not blue as in the adults, but green. The beaks were red, not quite as deep or bright as the adult cock. After being out of the nest about three weeks the beaks turned black. The young cocks will change again to red during the first moult, the hens remaining black. The young are now as large as their parents—strong, healthy, and powerful on the wing and, in fact, they are perfect in every respect.

So ends the private story of a pair of Derbyans and their owner's elation and misgivings—a further chapter in aviculture.

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BIRD LIFE IN BRITISH COLUMBIA

By L. J. BETTISON (Oliver, B.C., Canada)

As a keen ornithologist and a breeder of many interesting foreign birds and a member of the Avicultural Society, I thought some readers might be interested to hear of some of our local wild birds that frequent this part of British Columbia, the Okanagan Valley of the Interior. I have a mixed fruit orchard here in the Oliver district—we are known as the "Dry Belt" and have to grow everything under irrigation.

In the spring when all the trees are in full blossom, the countryside is full of bird life, some resident and many migratory coming here to nest. The small Mourning Doves build in the apple trees and can be heard any time with their rather mournful cooing, but very soft and pleasing. The small Lazuli Bunting nests in the bushes, especially the raspberry patches. The little Goldfinch, which is in full colour of yellow and black, nests in the fruit trees, especially the peach trees. Also, our Siskin has taken to nesting in the orchards—is rather greyer in colour than the English Siskin. We also have a Purple Finch about the size of the House Sparrow.

Next, our Red-breasted Robin, or Thrush, nests in the apple trees. The Mountain Blue Robin takes advantage of any holes or boxes it may find, also its relative the Western Bluebird—not quite so much blue in his make-up. The Red-shafted Flicker (a Woodpecker) and the small Spotted Woodpecker will use any hole it may find. The small

Tree Swallow will nest in any vacant nest-box. We also have the Wood Duck nesting in the river bottom land in hollow trees, such as cottonwoods, etc. The little Song Sparrows and Chipping Sparrows nest in the orchards and our Cowbird usually finds their nests to place one of her eggs in. We have the little Chickadees like the titmice in England. The Meadow Lark, a big bold bird the size of the Starling, nests in the grass and the Orioles make their hanging nests from the tops of many trees. I have one—a cock bird—a pet for two years now and he is very fond of bread and milk. Last summer I found quite a number of Waxwing nests in our trees, and how they love our cherries! The Black-headed Grosbeak, also nesting here, has a lovely song.

The little California Quail are here in swarms. I have counted as many as seventeen in one of my aviaries left open for the winter. The cock quail have a very pretty call, usually given from the top of a fence post. Our great trouble here is so many of our insectivorous birds get poisoned from the sprays which we unfortunately have to use.

Two kinds of Humming Birds make their tiny nests and lay two eggs; the Rufous and the Calliope, the latter with a violet bib and the former with a rufous coloured throat.

A bird called the Kingbird—a large black and white flycatcher—nests in most orchards and will chase any bird, including Crows, from the vicinity of its nest. It has been known to perch on the shoulders of a Crow, while in full flight, pecking for all it is worth. Often, when picking plums, I have known the birds to dart at my face, just missing me. This will give you some idea of some of our birds in the orchard.

I am hoping, this year, to breed English Greenfinches, Chaffinches, Siskins, Yellowhammer, Reed Buntings, and Cirl Buntings. I am trying a pair of Red-headed Buntings from India and I have many foreign birds, a variety of Doves, Crested and Bronze-wing Australian, Indian Turtle, local Mourning and Mexican Ground Doves. I have just got a cock Diamond, but no hen.

By the way, the English Starling is making his appearance here and I hope he does not get too numerous. He is seen in flocks of our Red-winged Blackbirds, and Brewer's Blackbirds, which are really a kind of a Starling. At the coast, in Vancouver, the black and white Chinese Starling is also increasing.

I have not mentioned our insectivorous birds much, but we have a large variety and they mostly favour the bottom land along the Okanagan River. The Long-tailed Chat is our Nightingale and can often be heard at night. Our mimic is the Catbird, a blackish-coloured warbler, which is found in nearly every garden and is a great favourite. One of our "Nightingales" is a very small frog that lives, in hundreds, in any swampy place and sings in chorus that takes some getting used to.

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SOME ADDITIONS TO THE WILDFOWL TRUST'S COLLECTION AT SLIMBRIDGE

By S. T. JOHNSTONE, Curator (Slimbridge, Glos., England)

The following ducks are recent arrivals at the New Grounds and may be of interest to readers.

Five specimens of Chinese Spotbill (*Anas poecilorhyncha zonorhyncha*) wild-caught, which were sent to us by Mr. Miyake, of Japan, arrived in May, 1955, together with some wild-caught Falcated Ducks (*Anas falcata*). The Spotbills differ from their more handsome Indian cousins in that their plumage is basically brown rather than grey, and the tip of the bill a deep orange. These are the first of their race to be brought to the New Grounds. They were fairly common in collections before the war, but they seem to be the only ones in Britain at present. Although they have been in the collection for several months they remain quite exceptionally shy and wild.

A welcome addition was a consignment of Ringed Teal (*Anas leucophrys*), from Senor Menge, of Buenos Aires. We received two pairs of these delightful little ducks in October, 1954. Unfortunately they were in very poor condition on arrival and three subsequently died. Happily the survivor is a male and this summer (1955) he mated successfully with one of two females which have been at the New Grounds for several years. Seven young have been reared, but all are of the same sex—females! These Ringed Teal are kept full-winged in an aviary and spend a great deal of time perching. The wings make a curious and very characteristic whistle as they fly. The downy young are like blue-grey Carolina ducklings, with the typically long tail of the Perching Ducks (Cairinini), and a similar walk, with complete absence of waddle. These facts, together with a relatively long incubation period (29 days) support the suggestion offered in the *Key to the Wildfowl of the World* (Peter Scott) and originally, I believe, proposed by Mr. Delacour, that the species should be classified with the Perching Ducks.

One of the most attractive of the Teal, and the smallest of the Tribe Anatini, is the Hottentot Teal (*Anas punctata*). For more than a year we have kept a trio of these birds in the aviary. They are the African version of the South American Versicolor and Puna Teals, but smaller and with a dark triangular patch on the cheeks. This trio was caught and sent to us by Mr. Christopher Savage. Mr. Savage has returned to Africa, and through the good offices of Dr. John Thoburn Williamson, of Williamson Diamonds, Ltd., Shinyanga, he has been able to send us a number of ducks including two more pairs of Hottentots, which are now well-established. The species was bred at Walcot Hall immediately before the last war, so there seems no reason why they

should not breed again, and it would be delightful to re-establish these decorative little birds in British collections.

In June we received from Phra Abhaivongc, of Siam, ten White-winged Wood Ducks (*Cairina scutulata*). These enormous ducks were very wild and refused food for several days. They were quarantined close to our live eel tank and when catching the fish to feed our saw-bills, we tossed a few pieces to the Wood Ducks who consumed them greedily. After a fortnight of eating large quantities, they lost interest in the eels and now feed on the usual diet of poultry biscuit and grain. They have lost their travel-stained feathers and have emerged in immaculate plumage. The females are smaller than the males. Their heads are less white and their bills are not so bright an orange as the males. They make an attractive addition to our collection and have become very tame, though in the summer they were in sad disgrace. A brood of South American Comb Duck disappeared suddenly and theory attributed their disappearance to the White-winged Wood Ducks' cannibalistic tendencies, especially as one had previously been seen trying to swallow a Mallard duckling.

A fine pair of King Eider Ducks (*Somateria spectabilis*) are now in the collection and were acquired in intriguing circumstances. The male, in full plumage, was washed aboard a fishing trawler in Icelandic waters. The Master, on arrival at Reykjavik, took the duck to Dr. Finnur Gudmundsson, of Reykjavik, who was at first delighted with the prospect of so fine a skin for his museum. But then he remembered our desire to have this species represented at the New Grounds, and promptly dispatched him to us. He had been fed on shrimps before being sent, and after force-feeding for two days on live eels he was quite prepared to help himself. A happy sequel to this story is that during a visit by our Director, Peter Scott, to the Copenhagen Zoo, Dr. Boje Benzon, hearing of our drake, offered us a fine female, which arrived a few weeks later. The two paired up, but the season was obviously too far advanced for any hope of nesting. Persuading Eiders to moult properly is one of the more difficult avicultural problems, and in this respect males seem to be more difficult than females. The King Eider drake was late going into eclipse plumage, but he got there in September. Correspondingly he has been slow coming back into plumage, but by Christmas he was almost in full plumage again, and the full plumage drake King Eider is one of the finest of all waterfowl. The duck has come into a plumage which is rich chestnut brown, far brighter than that of any female common European Eider, and she shows the two thornlike feathers on her back, though somewhat blunter than in the male.

Of the five pairs of European Eiders kept at the New Grounds only two breed regularly, so we should not perhaps be too optimistic about breeding the King Eiders.

THE BREEDING OF THE LESSER ROCK SPARROW

(*Gymnoris dentata*)

By C. AF ENEHJELM (Helsingfors, Finland)

Like most species of foreign sparrows the Lesser Rock Sparrow is not regularly imported, and when imported there does not seem to be any great demand for the species. Like most other sparrows, especially those in a sombre dress, they are not very popular with the fanciers and obviously hard to sell.

Some six years ago, when visiting the Odense Zoo in Denmark, I saw in a newly arrived consignment of African birds a sparrow which I had not seen before. My colleague, the late director, Chr. Jensen, gave it to me, but later in the year it was killed by a Swainson's Sparrow. In 1952 I found five specimens at a dealer's in Copenhagen which I obtained. The species of the birds was not known and when examining them at home they turned out to be the Lesser Rock Sparrow (*Gymnoris dentata*). Being very busy during 1953 I had no time for making any breeding experiments and kept them in a flight with various weavers.

The birds were not difficult to sex. When I obtained them in 1952 they were all quite similar, obviously young birds. In the meantime I had not made any closer observations, but in 1954 I decided to try to breed them and sexed them out. They turned out to be two cocks and three hens. The colour of the cock is mainly grey and the eyebrow of more pronounced chestnut colour than that of the hen. The hen's colour is distinctly more brown than that of the cock. One pair was separated in a small indoor flight $2\frac{1}{2}$ by 6 feet and 7 feet high. A nest, mainly of coconut fibres, was built in a Budgerigar nest-box but no eggs were laid during the whole summer.

In 1955 I erected a new indoor flight, 22 by 10 feet and 6 feet high, with three large windows facing south and a smaller one facing east; this was rather sparingly equipped with branches, leaving much flying space. Numerous nests of different models: Harzer wicker cages, half-open boxes, Budgerigar nest-boxes, and Keston triangular nest-boxes were hung on the walls at different heights from the floor to the roof. The room was separated from two adjoining flights by $\frac{1}{2}$ in. mesh netting. Two shelves for feeding receptacles were placed on both sides of the entrance door, and a big zinc tray for a shallow bath and an automatic drinker on the floor. The soft food was not given in pots, but scattered over the sand in a big shallow zinc box on the floor. It is my experience that birds more readily take to food when they can pick it up from the ground than if it is offered in pots. The

sand in the box was changed every day and untouched food removed at the same time.

In this flight I released a pair of the Rock Sparrows. The birds were marked with coloured celluloid rings, and I had noted which birds kept together. As well as the sparrows, pairs of different small weaver finches such as Grey, Orange-cheeked, and Golden-breasted Waxbills, Avadavats, Cordon-bleus, Parson, and Masked Grass-finches, Bichenow's, Diamond Sparrows, Red-headed Parrot Finches and Cuban Finches occupied the room. All the birds were released in March.

At the end of March I observed that the hen Rock Sparrow came out from a Keston triangular box hung on the wall at about 5 feet between the windows, the opening facing the inside of the room. On examining the box I saw that the nest was built exclusively of small feathers which had blown into the room through the netting from an adjoining flight for young Budgerigars. Different kinds of building material were, of course, at the birds' disposal but neither hay, coconut fibres, white dog hair, or very thin birch twigs had been used. There were two eggs only in the nest; typical sparrow eggs in colour and about the size of canary eggs. When examining the nest some days later, on 1st April, two newly hatched youngsters were seen; these left the nest on 19th and 22nd April. The youngsters were a bit smaller than their parents and of the same colour as the female. As I saw them just after leaving the nest it was an easy task to catch them up and ring them with different coloured rings. The following day they flew almost as well as the old birds.

I now examined the nest every day, and the day after the last youngster had left the nest, on the 23rd April, a new egg was laid, followed on the 24th and 25th by two more. Only one youngster was hatched on 7th May; the two remaining eggs had disappeared on the 11th. The youngster left the nest on 27th May and on the same day an egg was laid, followed the next day by a second. These eggs were probably clear and disappeared on the 14th June. Three eggs were laid again on 18th, 19th, and 20th June respectively. On 1st July two youngsters were hatched and on 3rd July the last egg hatched. All the youngsters were reared and left the nest on 23rd, 24th, and 25th July. At this time some other bird had removed all the feathers from the nest so that the three youngsters were sitting on the wood of the box, not very comfortable when the form of the triangular box is considered.

In all four clutches of eggs had been laid, three of which had hatched and been successfully reared. No further nesting attempts were made after the fourth clutch.

The youngsters are all thriving well. As far as I can see they all still have the colour of their mother, but I have not tried to catch them

up for closer examination as other birds are still sitting and rearing in the room.

I do not know if it is a special or individual character of this pair, but the birds have all the time been as peaceful as a pair of Bengalese or Parrot Finches. I never saw them chase or attack any other birds, not even a pair of *Fringillaria tahapisi*, their nearest relatives in the flight. Even when sitting on a new clutch the older youngsters were never chased. The birds were not shy, the hen never left the nest till I was close in front of the nest opening. Ten minutes after the nest had been hung in place and I had left the flight she was sitting again.

As to rearing food, egg-food, fresh ants' eggs, sprouted millet, canary seed, oats, and sunflower seeds were offered, and later in the season chickweed too, but very sparingly, as it was hard to obtain in this exceptionally dry summer. As mentioned earlier, the rearing food was scattered on the sand in a large shallow box. As far as I could see fresh ants' eggs were first taken when fresh food was offered. I suppose, however, that other kinds of food were also used as the rearing food was only offered once a day.

I have always fresh ants' eggs at hand, outside the season frozen. It is my impression that many birds start to feed more easily when they have fresh ants' eggs at their disposal than with any other food. When the youngsters in this way are not starved from the start they will be able to beg for more food more energetically, which stimulates the parents to take other rearing foods too, which they probably would not use if the feeding instinct (or reflex) had not first been released by that, from the bird's point of view, obviously very desirable food, the *fresh* ants' eggs.

According to Dr. Russ this species was first bred by the Prince Ferdinand of Sachsen-Coburg-Gotha (later Czar of Bulgaria) in Vienna in 1873, when one young was reared (*Teste*: Russ, *Die fremdländischen Stubenvögel*, i, page 685). The late Czar was one of the foremost aviculturists of his time.

A further breeding success was obtained by Mr. P. W. Louwman at Rijswijk in Holland in 1933 in a large aviary. Three youngsters were hatched, one was thrown out and two left the nest on 12th June and lived to maturity. Mr. Louwman is now owner of the Wassenaar Zoo, and the bird-house, the famous Louise Hall, probably the most beautiful bird-house in any zoo, is no doubt well known to many members of the Society.

As a summary: It seems that the eggs are laid on successive days and that sitting starts when the first or second egg is laid; incubation time thirteen days. The young leave the nest when about 22-23 days old. As far as I could detect they were fed (by the male) for about a fortnight after leaving the nest.

OBSERVATIONS ON THE VOICE AND SOME
DISPLAYS OF CERTAIN PIGEONS

By DEREK GOODWIN (Virginia Water, Surrey, England)

(Continued from p. 33)

VOICE

In the Speckled Pigeon, the European species of *Columba* and most (probably all) of the *Streptopelia* species the vocalizations of adult birds can be divided into three or four "basic calls". These four basic utterances are subject to some variation but not sufficient to render the concept invalid. They seem best termed the "Advertising-coo", the "Display-coo", the "Distress-call", and the "Excitement-cry". Many American writers (Levi, 1940, Whitman, 1919, etc.) have used the term "crow" for the display-coo. I consider this term unsuitable as it wrongly suggests that this note is equivalent to the crowing of a cock (*Gallus*).

The advertising-coo—the "coo" of some American, and the "song" of many British writers on pigeons—is used in a wide variety of situations whose common factor is that the bird is prevented from performing some (usually reproductive) activity by some cause which does not arouse overt fear or aggressiveness. Usually it is through lack of an appropriately responding partner. In *Columba* it seems confined to birds in some phase of the reproductive cycle, but this is not invariably the case in *Streptopelia*. The nest-call (Goodwin, 1955) is either identical with the advertising-coo or similar, and obviously merely a variant of it, in all species whose voices are known to me. The nest-call of the Mourning Dove (*Zenaidura carolinensis*) would appear from descriptions (Craig, 1911) to differ more than usual from the "song".

The display-coo accompanies the bowing-display (q.v.). It tends to be polysyllabic and indistinct in *Columba*. In no instance is it louder than the full intensity version of the advertising-coo. In the Stock-Dove it is only audible at a few yards range and the same is apparently true (Taibel, 1954) of the White-collared Pigeon (*C. albitorques*).

The distress-call is a grunting or gasping "Öörh!" or "Ěērhh!" very similar in all pigeons known to me. In extreme fear it may be intensified and heightened in pitch almost to a scream. In some contexts this call functions as a warning note. It is given at the sight of a flying bird of prey, if the latter is too far distant to evoke more positive evasive action, and sometimes at sight of other predators. It is, however, also given in situations where the bird shows no signs of fear and its feelings seem rather to be of annoyance, discomfort,

indecision. Adults usually give it when they see their young handled. On cold winter mornings my Barbary and Red-eyed Doves often utter it whilst still on their roosting places. Here it seems to be an expression of discomfort or perhaps of annoyance caused by a conflict between the impulse to fly down and feed and reluctance to leave the perch. Whitman records pigeons (species not stated) giving this note when they saw others copulating. Probably this refers to birds that would have interfered with the act had they been free to do so. Some species give it immediately after copulation.

In the above two instances it seems equivalent to the excitement-cry of *Streptopelia*. When used after mating it seems more likely to be an expression of aggressive impulses than an expression of pleasure as Whitman suggests.

The excitement-cry is an emphatic "non-cooing" call. It may intergrade with the distress-call, but in typical form is usually distinct from it. It is given as an expression of either aggressive or sexual excitement, but seems linked rather with the intensity than the specificity of the emotion felt. An excitement-cry is common to all the ring-necked doves whose voices have been described (Newman, 1908 and 1909, Goodwin, 1952; Hoffstetter, 1952 and 1954) and by the Turtle Dove. There can be little doubt that all their near allies (e.g. *S. lugens*, *S. reichenowi*, et al.) agree with them in this. The Laughing Dove and the Spotted Dove appear, however, to have no excitement-cry. At least they do not normally utter it in the same situations as the other species do. This fact, together with some of their plumage characters, suggests that these two species stand in closer relationship with each other than either does to any other species.

Generally speaking female pigeons coo less loudly and less often than males, and they do not normally use the full intensity sexual form of the display-coo. They use the excitement-cry and distress-call as freely as males. Unpaired females in reproductive condition will often use the advertisement-coo as freely as a male.

Young pigeons possess, apart from the puffing and bill-snapping used in the defensive-threat display (q.v.), only a sibilant squeaking note. This is used as an expression of any apparent excitement, and thus approaches in significance and causation the excitement-cry of the *Streptopelia* species. One has the impression, however, that as soon as the young bird is capable of feeling the same (apparent) specific emotional moods as the adult it will "try" to make the adult notes. In the Speckled Pigeon, *C. livia*, and the Barbary Dove, probably also in other species, this may occur as soon as, or even a little before, the bird is able to fly. At first it can only squeak in the same rhythm as the adult's coos and its voice only gradually "breaks". Even after it has begun to coo and cry in the adult manner (though not as

yet with the proper adult sound and intonation) the young pigeon will still use the infantile squeaking when begging. As is the case with young grebes, young pigeons use identical cries and wing movements when begging an adult for food as when it attacks them. The only difference is that when begging for food the young one reaches up eagerly, trying to insert its bill into the adult's mouth, and when "begging for mercy" it turns away from the adult, fleeing or cowering.

C. livia

The advertising-coo is the well-known moaning "Ōōrh" or "Oh-ōō-ōōr" subject to some variation. It is given when nest-calling, when ready to feed well-grown young and as a "song" from some perch in or near the nesting territory. Tame specimens, when breeding, but not otherwise, will coo in this manner when waiting for their owner to feed them.

The display-coo is the rather hurried "Ōō-rōō-k'tōō-cōō" (Heinroth's "Wang-wang-ruckuh"). In the intense sexual form of the bowing-display (q.v.) this phrase becomes blurred and its final syllable emphasized and longer drawn. This is probably due to elements of the advertising coo—and its correlated subjective mood—being mixed with or superimposed on the otherwise self-assertive mood and vocal expression.

The distress-call is as described under the general heading. Long-drawn, loud, panting forms of it are given by timid domestic or captive birds defending their nests against an intruding hand. It seems then to be an expression of fear, due to thwarted escaping impulses, rather than of anger, since tamer specimens attack in silence or give the display-coo. Intermediate forms between the distress call and the advertising-coo are used by the female towards her mate in appeasing contexts and more rarely vice versa.

There appears to be no true excitement-cry but a low fretful murmuring sound, only audible at very close quarters, is often uttered, usually when the bird appears somewhat perturbed or angry. This may perhaps be a vestigial form of such a cry.

The Speckled Pigeon

In voice, as well as in display and some morphological characters (Goodwin, 1956), this species seems to stand much closer to *C. livia* than do the Stock-Dove or Wood-Pigeon. The advertising-coo, in its high intensity form, is unmistakable but difficult to transliterate. It could perhaps be written "Wōōrh wōōrh wōō-wōō-wōō-wōō-wōō" or "Ōōrh-ōōrh-hōō-hōō-hōō-hōō-hōō", the opening notes usually faint, slow and muffled and the succeeding ones increasing in loudness, speed, and emphasis. Although this sounds at first very different

from the advertising-coo of *C. livia* I have the impression that it is in fact nothing but the latter's "Öörh" calls, speeded up and run together. When, apparently, less intensely impelled to call, the Speckled Pigeon will utter the "Öörh-öörh" notes more slowly and they are then hardly distinguishable from the homologous utterances of *C. livia*. The Speckled Pigeon gives this call under the same circumstances as *C. livia*, but (so far as one can judge from a limited number of captive birds) rather less readily. I have only seen it given on the nest-site on a few occasions and these were all rather low-intensity variants that a female gave when her mate came with nesting material for her. This may reflect incomplete observations due to the relative wildness of my specimens rather than actual specific differences between this species and *C. livia*.

The display-coo is a deep, emphatic "Ööröö-cōō!" or "Öör-öö cōō-ōō!" commonly repeated twice or more in succession and subject to some variation of tone and emphasis. Often a soft, short "öö" is audible before the main phrase "öö-Ööröö-cōō!" My only male of the southern form *C. guinea phaenota* gave a more lengthened version when displaying intensely "Ööröö-cōō-ōō-ōō!" I do not know if this difference was of any racial significance. A Stock Dove-like snapping of the mandibles may punctuate the display phrase, but the majority of birds do not do this audibly, if at all. The display-coo of the Speckled Pigeon is always self-assertive and often definitely threatening in meaning though its utterance shows that the bird is, at least at the moment of giving voice, inhibited from attacking.

As with the advertising-coo, the display-coo of the Speckled Pigeon strikes one very forcibly with its similarity to that of *C. livia*, although in this case the notes are delivered much more slowly and deliberately instead of in quicker time. As with *C. livia* the last syllable(s) of the display-coo tend to be more lengthened and emphasized in sexual than in purely threatening contexts.

The distress-call is like that of *C. livia*, but perhaps tends to be a little louder on the whole. It is given under all the circumstances that elicit it in *C. livia*, but also seems sometimes to be used as an expression of any intense emotion. Thus it is given immediately after copulation and also (sometimes) when attacking other birds.

The Stock-Dove

The advertising-coo a rather hurried-sounding but (to my ears) musical "Öō-öö-öö!" or "Cōō-ōō-röö!" subject to some variation. It is given in the same form when used—as it habitually is—as a nest-call.

The display-coo is a very soft, faint, droning "Öōh-ōōh" or "Cōō-ōō, cōō-ōōh" punctuated in the middle by a soft snapping of

the mandibles. It is only audible within a few yards, hence the frequent statement in bird books that the Stock-Dove is silent when displaying.

The distress-call is like that of *C. livia*, but perhaps rather higher pitched, and given in the same situations.

The Wood-Pigeon

The advertising-coo is the well-known musical cooing "song" which adds so much to the enjoyment alike of our loneliest woods and our dirtiest and most depressing London gardens. It could perhaps best be rendered "Öö-ōō-ōō-öö-öö, öö-ōō-ōō-öö-öö, öö!" each phrase is usually repeated from two to five times and ends on an abrupt "öö!" To most of us, however, the advertising-coo of the Wood-Pigeon will ever suggest "Tak too coos, Taffy, tak!", "My toe bleeds, Betty, Oh!" or some other firmly "imprinted" trans-literation of our childhood! It has been pointed out (Huxley and Brown, 1954) that the phrase usually begins on the second note, the "too" of the "tak too coos..." wording. This appears to be the case when one is at a little distance but on five occasions when I have been within a few feet of a Wood-Pigeon (a different bird each time) as it cooed, it began with the "tak" but this so faint as only to be audible at close quarters. The Wood-Pigeon's nest-call is a rather low-pitched "Öō, öōōrh!" subject to variation and sometimes sounding strained and anguished though not typically so. Despite its apparent difference from the advertising-coo it seems in fact to be merely the opening "Tak too" of the song phrase rendered slowly and softly.

The apparently more highly developed phrase of the Wood-Pigeon's advertising-coo, together with a distinct and much simpler variant used only as a nest-call is perhaps due to its being originally a forest bird. This may have favoured the development of a loud, distinctive "song" with a definitely threatening context in reference to unseen trespassers, which in turn necessitated a recognizably different form being used when the function was to attract and not repel another bird. This is mere speculation. It is certain, however, that a male Wood-Pigeon alone on his nest-site seldom gives the nest-call. He stands in normal posture and utters the usual advertising-coo. When his mate, or a prospective mate, comes in sight and shows signs of interest he lowers himself and begins to utter the nest-call and to nod invitingly.

The distress call of the Wood-Pigeon is much like that of *C. livia*. It is apparently given after copulation (Witherby, et al., 1939, Whitman, 1919), as with the Speckled Pigeon. I have not been near enough to copulating pairs of this species to hear whether or not some fairly quiet call was given.

Barbary Dove

The advertising-coo is the familiar “Cöö, C’rrōō”, “Cöö, c’rrōō-ōō!” or “Cöö-c’rrōō-a!” I am not able to distinguish it with certainty the display-coo, which is perhaps, typically, a little less long-drawn and “pleading” in tone than at least the nest-calling versions of the advertising-coo. With experience one can usually guess the mood of the bird and its circumstances from the subtle tones and emphasis of its cooing, but I fear any attempt to describe such minutiae in words would be useless, if not actually misleading.

The cooing is used under the same circumstances as in *C. livia*, but also seems to function (as it may in the Wood-Pigeon) as a contact note when the pair have become separated. Specimens released from captivity for the first time in their lives usually coo (as a rule only once and rather softly) on alighting after their first flight. They may do this even if they are not in reproductive condition.

The distress-call is like that of *C. livia*, but rather higher-pitched and (usually) longer drawn-out. It often suggests a single note of the excitement-cry but charged with feelings of despair, sorrow, or fear instead of aggressive self-assertion.

The excitement cry is the rather high-pitched laughing “hě-hě-ě!” I had one male Barbary (which I most foolishly liberated and lost before I had bred him) whose excitement-cry was a single, long-drawn almost screaming “Hěěěě!” sounding much like the excitement-cry of *S. d. decaocto*. In all other respects this bird was typical of the domestic form. The excitement-cry is uttered by both sexes immediately after copulation, as well as in other moments of sexual and aggressive excitement (see Goodwin, 1952, for fuller details).

Barbaries often utter a very faint, rather plaintive, murmuring sound. This is done without any special posturing. Indeed, when I first heard these notes—which are only audible when the bird is within a few feet of one—I thought the bird giving them was suffering from respiratory illness. These notes may sometimes have an appeasing function, but I think they usually indicate only a very low level of any form of emotional excitement. Sometimes indeed they may develop into the excitement-cry. I have heard similar murmuring sounds from the Red-eyed Dove and *C. livia*. Probably they are made by all species.

In the wild palearctic form of the Collared Dove (*S. d. decaocto*), the display-coo, advertising-coo, and the nest-call are distinct (Hofstetter, 1952, 1954), but not markedly different. The excitement-cry is a single drawn out note (often repeated twice or more) that is difficult to describe. It has been compared to the distant cry of a black-headed Gull, *Larus ridibundus*, or the more distant scream of a peacock, *Pavo cristatus*.

Red-eyed Dove

The advertising-coo is a spirited, cheerful-sounding "Cōō-cōō, cōō-cōō" or "Cōō-cōō, cōō-cōō, cōō-cōō, cōō-cōō!" usually repeated twice or more. The same form of it is used as a nest-call. The display-coo is hurried and muffled and suggests a muted and much speeded-up version of the advertising-coo. The excitement-cry is a sharp, rather high-pitched note that could almost be described as a short scream. It is suggestive in its emphasis and suddenness of the "spitting" of a defensive domestic cat. To my ears this cry always sounds mono-syllabic, but Newman described it as "a whistled 'Wee-ha'". Unlike the Barbary, with which it otherwise agrees in the circumstances under which it utters its various calls, the Red-eye Dove often utters its excitement-cry when handled. Here it seems to express extreme fear and is given particularly if the bird is struggling to escape. Except that it is perhaps sometimes more drawn-out I am unable to detect any difference in the excitement-cry given by a frightened bird in the hand and that given when angry, or after copulation. The usual distress call is similar to that of the Barbary.

Turtle-Dove

The advertising-coo is the "Cōōrr-cōōrr" or "Tūrr-tūrr" from which the bird's name derives. A variant of this "Cōōrr-cōōrr-cōōrr" is used as a nest-call. It is, however, also given from situations—such as high up in bare or thinly foliated trees—where the species never nests. Possibly this occurs in response to the presence of a female to which the previously advertisement-cooing male wishes to attract rather than repel. I have not seen a Turtle-Dove give the nest-call when actually on its song-post (usually a bare, high bough overlooking the nesting area) and suspect that when giving it the bird is always in a situation that to some extent suggests to it a potential nest-site. Unfortunately I did not pay enough detailed attention to the hand-reared Turtle-Doves that I kept and bred in my youth, and under the present bird-protection laws it is not permissible to take any young ones for hand-rearing and close study. The display-coo is a hurried crōōr(wa) crōōr(wa) crōōr(wa) in time with the rapid bobbing movements used in the bowing-display (q.v.).

The excitement-cry is a short percussive note suggestive of the sudden withdrawal of a cork from a bottle. It appears to be slightly less freely used, or rather that a slightly higher pitch of excitement is necessary to elicit it, than the homologous cries of the ring-necked doves. The distress call is similar to that of the Barbary, but perhaps higher pitched.

The very little cooing that I have heard from known females was hoarser and less musical, as well as much less loud than the male's cooing.

The Spotted Dove (Ceylon race)

The advertising-coo is an emphatic "Cöö, crōō-ōō, crōō-ōō!" or "Cööcöö, crōōr-crōōr!" subject to much minor variation. It has a rising cadence and an excited "cheering" tone unlike that of any other dove known to me, although except for this quality of excitement in their sound the "crōōr" notes are rather like those of the Turtle-Dove. I have heard my male bird give all his usual variants of this phrase both from his perch and when nest-calling. The female utters quiet and indistinct, but nevertheless rather hoarse and unmusical, versions very freely. This she often does whilst incubating if the male begins to coo. Such cooing from the nest, like the nocturnal cooing in which most doves indulge seems potentially dangerous. Perhaps few natural enemies of doves use their ears when seeking prey.

The display-coo is merely a slightly simplified form of the above "Cöö, crōōr!" or "Cöö, crōō-ōōr!" given while bowing (q.v.) and repeated at each further bow.

The distress-call is rather loud for so small a bird, and perhaps also rather longer-drawn out than in other species mentioned, but the difference is slight. There appears to be no excitement-cry.

PHILOGENY

It seems not out of place to make some remarks as to the probable relationships of the species that have been discussed. The *Columba* species are, without much doubt, more closely related to each other than any one of them is to any of the *Streptopelia* species. The suggestion (Bodenstein, 1949) that the ring-necked doves are more closely related to *C. livia* than is the Wood-Pigeon seems to me untenable. That in some points of structure the latter may be less like *C. livia* is true, but these differences are all due to adaptations to tree or ground feeding respectively and are not likely to have important phylogenetic significance. In its displays, as in its plumage, the Stock-Dove shares some characters with *C. livia* and others with the Wood-Pigeon. I think, however, that it is probably more closely related to the former, its striking superficial resemblance to the Rock-Pigeon could well be, at least in part, due to convergent adaptations to ground feeding, hole nesting, and a relatively open habitat.

The Speckled and Rock-Pigeons, although clearly distinct species, seem to be more closely related to each other than either is to the Stock-Dove or Wood-Pigeon. I have elsewhere (Goodwin, 1956) discussed their taxonomic characters and the reasons for supposing their similarities to be due to close relationship rather than to convergent adaptations to a similar way of life. I have the impression that of the two the Speckled Pigeon stands nearer to the Stock-Dove and Wood-Pigeon, in spite of its greater colour difference, than does *C. livia*.

Of the *Streptopelia* species the Barbary and Collared-Doves are almost certainly conspecific. They are clearly more closely related to the Red-eyed Dove (and probably to all other ring-necked doves with the possible exception of the Red Dove (*S. tranquebarica*) than to the Turtle-Dove. I think this latter is, however, probably nearer to the ring-necked *Streptopelia* species than it is to the Laughing and Spotted Doves, in spite of its superficial colour resemblance to the latter species. As has already been mentioned (see section on voice) the Laughing and Spotted Doves appear closely related to each other and to stand a little apart from the other *Streptopelias*.

The above remarks only take into account the species dealt with in this paper. If one knew sufficient to deal with all species of pigeon a very different picture might emerge. The Wood-Pigeon seems nearer akin to several Asiatic species than it is to the Stock-Dove whilst the latter's nearest relatives are Eversmann's Stock-Dove *Columba eversmanni*, and the Somaliland Pigeon, *C. olivae*.

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BREEDING OF THE RED CARDINAL

By GUST. A. GJESSING (Drammen, Norway)

After unsuccessful attempts in 1953 and 1954 to breed the Red Cardinal, I have finally found the way to do it and the result was three nests in 1955 with : first nest, 3 eggs—two young matured ; second nest, 3 eggs—two young matured ; third nest, 3 eggs—two young still in the nest as this is written. During two unsuccessful seasons the Red Cardinals built nests and hatched young, but the young died in the nest. I wrote to Mr. Allen Silver for advice. He replied : “ Do not be discouraged because you have not had any luck with the Red Cardinal, I have in my time never heard of anybody here who succeeded.”

This should mean that the breeding of this bird is quite uncommon. I acquired a pair in 1953 from a member in Denmark, Mr. Walther Langberg, and that summer they built a nest in an old canary wire nest placed in a spruce planted in the aviary. They were at that time with about fifty different finches in an aviary 4 metres by 4 metres outside flight. But the young died after about a week.

Next year they nested in the same nest and under the same conditions, and exactly the same happened. I also had a pair of Pope Cardinals in the same aviary and these also hatched young that died after about ten days.

I had some correspondence with a German breeder who claimed to have raised several nests of Red Cardinals on egg-food alone. Having read Mr. Brooksbank's notes on this bird in his book, I was naturally very sceptical as to the correctness of the statement of this German breeder, but decided to try his method this year. I placed the Red Cardinals in a smaller aviary (2.5 yds. by 2.5 yds.) with 2/2 Violets and 1/1 White-winged Budgerigars. In a corner I set up a pine bush and in this bush I placed the old wire nest that they had preferred before.

I filled the nest half full with coco-nesting materials and threw some more on the ground. By Christmas I had started to feed them regularly with egg-food, made in the usual way, one egg and some crumbled stale white bread, and added half a teaspoon of strawberry jam each day. At first they did not touch the egg-food, but as time went on and they had it served every day, they started to eat it. Soon after I turned them out in the aviary they finished the nest and the hen laid three eggs, which hatched out, but one young disappeared the first day. I have a strong suspicion that the cock simply considers the possibility of his being able to rear as many young as are in the nest, and if he thinks there are too many he simply eats those he wants to get rid of. They have disappeared so absolutely that this is the only thing I can think of ; I have read in *Cage*

Birds that Thrushes do this, why not then Cardinals? Anyway, the two young were raised on the egg-food, and fourteen days after birth they flew out—very small and very helpless, and in colour all brown. After a week they started to grow and one got a quite bold “top” on his head and showed at first white on the belly, which later turned a vague rose. It was quite easy to see that this was a male. By now they are seven weeks out of the nest and the whole crown of his head, under the wings, and shoulders are red and there is a suffusion of rose on his chest. His tail and large wing-feathers are red with black. The other is certainly a hen. She has the blackish-red feathers in the tail and wings, but is brown otherwise. While the young were being taught to eat, the hen laid and hatched her second brood. There were again two young, and the procedure of leaving the nest was the same as already described.

I noticed that as soon as the second brood left the nest the cock started to pick on the first two young; he chased them around so I had to move them out of the aviary. I had not then seen them feed alone, so I put them for a few days in a cage to see if they really could get along without help. They could; they ate egg-food and small seed. Then I gave them a few mealworms, they looked very sceptical at these at first, but soon learned to take them and to like them.

I also got some fresh ant cocoons for them which they very much liked, as I am of the opinion that some live food is necessary for the cock, at least while he is getting into his red costume, to get the colour better. I am very anxious to see him in complete colour, to find out if the bright red of the new imports comes on birds born here. By the way, I must mention that my Red Cardinals have regained the original bright red colour after every moult since I got them in 1953 in the early spring. Some writers seem to be of the opinion that they *always* turn a brick-red colour when moulting in confinement. This is not so.

The second brood of young are now being taught to eat; they look like two hens, and the old hen is having a third brood, the young now being four days old.

Another thing I noticed which might be of interest was that after the young had been out of the nest a week the cock started to feed them with jam, also regular Budgie seed mixture, in addition to the egg-food; probably to get them used to this type of food.

The first young are now in an aviary with four Cockatiels and one cock Golden Pheasant, which get along nicely. In the aviary where I keep about 100 Budgies, I had placed the pair of Pope Cardinals and they made a nest in the same tree that had been used the previous two years by the Red Cardinals; they reared three fine young one of which died two weeks after leaving the nest; the other two

have long been on their own. They acted almost exactly like the Red Cardinals and took the same food ; in addition, I made up a "fly-trap" by filling an old cage with raw fish and placing it in the sun inside the aviary. Soon flies began to flock around this and the Cardinals caught them very nicely and fed them to their young. The hen laid another clutch of eggs, which were clear, and has now for the third time laid three eggs which are not yet hatched out. I noticed the following on these birds : As soon as the first brood of young were out of the nest and she (the old female) had a new clutch of eggs, she taught one of the young to sit on the eggs to keep them warm while she helped the cock to find food for the two large young that were quite demanding. It was very amusing to watch her teach the little fellow to lie still and wait till she came with food for him. He soon was just as conscientious as his mother in seeing the eggs did not chill. By the way, the Red Cardinal is very fond of all kinds of fresh berries while rearing young. The Pope Cardinal, however, does not seem to take berries.

* * *

THE NATIONAL SHOW 1956

An increased number of classes, bringing the total to 46, were allocated to Foreign Birds at the National Show this year. This is the most liberal classification ever to be granted to the foreign section, and attracted a record entry of 700 exhibits. As might be expected, the largest classes were those for the common species of seed-eaters, the common Waxbill class having an entry of 33, but probably the most remarkable entry was that of 27 in the Sunbird class.

Almost without exception the exhibits were staged in excellent condition, and it was particularly pleasing to note the obvious care which had been taken by exhibitors to provide suitable cages of adequate dimensions. Many of the cages containing the smaller softbills were most tastefully decorated, and there is no doubt that the artistic presentation of the birds in this manner must help considerably to counter the adverse criticism of bird-keeping which is too frequently made by members of the public who visit the Show.

An outstanding Violet-eared Waxbill, belonging to Mr. H. Mitchell, was awarded the Rosette for best seed-eater, and the Special for best softbill went to Mr. Sawyer's magnificent King Bird of Paradise, which subsequently won the National Award of Merit for best Foreign Bird and the Supreme Championship of the Show against a total entry of over 10,000. It is many years since this species has appeared on the show bench, and Mr. Sawyer is to be congratulated on staging such an outstanding exhibit in absolutely faultless condition.

The same exhibitor won the Duke of Bedford Trophy, for the second year in succession, with his very beautiful Racquet-tailed Parrot, a species which I have not known to be exhibited before, and also the Maxwell Shield for the most artistically decorated cage.

Amongst the small seed-eaters were several pairs of St. Helena Waxbills, of at least three different races, and in the Munia Class were a good pair of Magpie Mannikins, two or three pairs of Rufous-backed Bronze-winged, and Spotted Munias, and also Tri-coloured, White-headed, and the less common Java Maja.

The Bunting class was won by a good pair of Golden-breasted followed by Lazuli and Rainbows, and an interesting, if less spectacular exhibit, the African Rock Bunting.

A good class of Weavers included excellent examples of the Madagascar, Chestnut, Thick-billed, and Mahali in addition to the more common species, and among the Whydahs were several Jackson's, together with Queen, Giant, and the attractive Yellow shouldered.

In the class for Gouldian, and Parrot Finches, the winning pair of Pintailed Nonpareils were claimed at the catalogue price of £12 10s. These were followed by one of the best pairs of Red-headed Parrot Finches I have seen, and there were several very good Red-headed and Black-headed Gouldians. Other Australian Grassfinches represented were Cherry, Star, Hecks, Bicheno, Crimson, Painted, and Chestnut-breasted Finches and Diamond Sparrows.

The class for Rare Waxbills included quite a number of Violeteared, Black-cheeked, Dufresne's, Sydney, and Melbas, and in the A.O.S. Small Seed eaters, Aurora Finches, and Pileated were shown. Also in this class were two unusual exhibits, a pair of Black-faced Canaries and a Madeira Goldfinch, *C. carduelis parvus*. The latter differed so little from the familiar British species as really to look out of place in a class for foreign birds.

Seventeen entries in the Cardinal and Grosbeak class included a number of Chinese Grosbeaks, particularly noticeable on account of their unusual white flight feathers, a pair each of Evening Grosbeak and Pigmy Cardinals, a cock Virginian Cardinal shown in excellent condition and in the full glory of its natural brilliant colouring, and good examples of Green, Red-crested, and Dominican Cardinals. The remaining Seed eaters included an interesting pair of Chingo Sparrows, Chinese Painted Quail, Diamond, and Zebra Doves.

The Softbill section was quite outstanding, not only for the brilliant of colouring and variety of the exhibits, but also for the number of species which had not previously been seen on the show bench. The first class, for Birds of Paradise and Bower Birds, contained only three entries, Mr. Sawyer's King Bird to which reference has already been made, Mr. Whitmore's Red Bird, and the same owner's very fine

Satin Bower Bird. Humming Birds were also few in number, and the class was won by Mrs. Draper's delightful little Pucheran's Emerald, a bird which I am told has now completed its fourth moult in captivity. It was looking extremely well at this Show, and gave the public ample opportunity to study the remarkable powers of flight of these tiny birds. Mr. Sawyer sent a Dusky Jacobin, the first example to be exhibited, and although of rather sombre hue, it was nevertheless attractive on account of its larger size and rather striking white tail.

The Sunbird class, as already mentioned, drew from exhibitors the remarkable entry of 27, and from the Show Manager the comment that there could surely be no more Malachites left in Africa! In spite of several absentees, the display of these beautiful nectar-feeding birds was a sight never to be forgotten, and it was no easy task to decide the order in which they should be placed.

Mr. Sawyer's cock Regal, another species appearing on the bench for the first time, was awarded first prize. It was in perfect condition and well displayed all the natural colouring of vivid scarlet, yellow, metallic golden-green, and blue-black—a very lovely bird indeed. The class also contained Amethysts, Malachites, Mariquas, Lesser Double-collared, and no less than four sub-species of the Greater Double-collared, including Grauer's, which has the golden-green of the upper parts replaced by metallic blue and the centre tail feathers noticeably longer. Mention must also be made of two Malayan Yellow-breasted Sunbirds, another species which I believe was exhibited for the first time. Less spectacular than the African species on show, they have nevertheless great charm, the metallic green of the upper parts being well set off by the soft yellow of the breast feathers.

The most outstanding exhibit in the Sugar Bird class, a cock Cape Sugar Bird, was again the property of Mr. Sawyer. It was unfortunate that this bird had attempted to murder his mate shortly before judging commenced, in spite of the fact that the pair had lived amicably together for some considerable time, and she had to be removed from the cage. In spite of this, the cock easily headed the class which was provided for any species of Sugar Bird and in which he was therefore correctly shown, although I feel that the species is so far removed from the South American Sugar Birds with which we are more familiar that the competition was somewhat unfair. An exceptionally fine cock Yellow-winged was second, followed by a pair of the same species, a cock Blue and a cock Black-headed.

Zosterops and Pekin Robins were together in the next class, with 5 entries and, in addition to the common Asiatic species, there were good examples of the large Cape Zosterop and a delightful and very small species which I took to be the White-breasted, *Z. abyssinicus*. Several good pairs of Pekin Robins were shown, but at least one, in

my opinion, was completely spoilt by intense colour-feeding which had produced an entirely unnatural appearance, the stain having even penetrated to the feet and claws. Surely the natural colouring of a really well conditioned Pekin is beautiful enough without artificial aids.

Among the small Tanagers the most unusual was the winning Orange-breasted, *C. thoracica* from S.E. Brazil. A few of these Tanagers were imported in 1936, and the species was last shown in 1939, and I imagine that the one now being shown by Squadron-Leader Everitt is the only example of its kind in the country. The same exhibitor was third with a very well coloured Yellow, and the Class also contained a Festive, several Superbs, and Blue and Blacks. Although the sexes of the latter are readily distinguishable by the very pronounced greenish tone of the hens, it is surprising to find how often two cocks are shown as a true pair, a mistake which occurred at this Show.

The larger Tanagers were combined with Bulbuls and Shamas, and the class contained two examples of the fine large Indian Black Bulbul, *Microscelis psaroides*, the broad and distinctly forked tail, high crest, and bright red beak and legs giving these birds a most striking appearance in spite of the dull hues of the plumage. Other exhibits were a fine Orange-rumped Tanager, several good Scarlets, Striated, Pretre's, and Black Tanagers, and two pairs of Red-eared Bulbuls.

Two excellent pairs of Shamas were shown to perfection, and a single cock entertained visitors to the Show with almost continuous song of quite exceptional merit. Two very distinct types were represented, the variation being most noticeable in the hens. The common Indian form, *K. macrura*, showed the clear grey head with a clean cut line of demarcation on the upper breast, the chestnut under-colour being very pale. The other, which I take to be an example of *K. suavis* of Borneo, was considerably larger, the grey of the upper parts being less clear and of a brownish tone, with the marking less clearly defined. The chestnut colouring of the under parts was much deeper, in fact little less intense than that of the cock.

Flycatchers, Robins, and Chats were well represented, and the class was headed by a delightful cock Tickell's Flycatcher in most perfect order, followed by Mr. Sawyer's Natal Robin, which is now well known on the show bench and was looking extremely well. A very nice pair of Short-billed Minivets were third. These birds were also in really wonderful condition, but the cock unfortunately lacked the brilliance of the natural scarlet plumage. The class also contained a Rufous-bellied Niltava, Noisy Robin, Indian Robin, African White-throated Robin, and pairs of Verditer Flycatchers and Silver-eared Mesias.

Fruitsuckers, Thrushes, and Jay-Thrushes were combined in the next class, and first place was awarded to a good pair of Hardwicke's Fruitsuckers, well staged in a most tastefully decorated cage. A Black-throated and several Golden-fronted Fruitsuckers were also shown, and Thrushes were represented by a pair of American Robins. Mr. Anderdon exhibited a very nice Chinese White-eared Mocking Thrush, and Mr. Whitmore a Rufous-throated Jay-Thrush, and it was pleasing to see that a pair of the attractive White-crested Jay-Thrushes, although a common species, were successful in gaining recognition.

The next two classes caused some confusion to exhibitors, as the first was for Starlings (True and Glossy and Pagoda), and the second for any species of Mynah, and it was not surprising to find similar species entered in both classes. However, Mr. Wragg very wisely transferred several entries, leaving the first class with eleven Glossy Starlings and placing all the Mynahs together in the second. Mr. Whitmore's pair of Amethyst Starlings were first, followed by the same owner's Purple-headed. Red-eyed Green, several more Purple-headed, Beautiful Spreos, and a Long-tailed Glossy completed the class.

The Mynah class had 17 entries, and it was very pleasing to see the reappearance, after many years, of the charming little Mandarin. As might be expected, there were a number of Greater Hill Mynahs, several of which subsequently distinguished themselves in the Talking Contest. The class also contained Southern Hill Mynahs, Malabars, Bank and Jungle Mynahs.

Toucans were represented only by a Green-billed and Lettered Aracari, but in the same class Mr. Whitmore's Knysna Touraco, *T. corythaix*, was a magnificent bird and well deserved the premier award. It was followed by Mrs. Draper's very good Hartlaub's Touraco.

Finally, three classes were provided for Softbills not otherwise classified, grouped according to size, and these contained some of the rarest and most interesting exhibits. The class for smaller species was won by Squadron-Leader Everitt's charming pair of *Ixulus*, followed by Mr. Sawyer's Audubon's Warbler, one of the most attractive of the many N. American Warblers, with striking plumage of yellow, grey, and black. Another N. American species, the Black-capped Chickadee, was also shown in this class, together with a Superb Manakin and two Chestnut-breasted Nuthatches.

There were twenty entries in the class for medium-sized species, and again Mr. Sawyer staged the winner, a White-collared Kingfisher, which was a quite outstanding exhibit. It was followed by a delightful North American Cat Bird, a species which, in spite of its rather dull colouring, combines the charm of a Shama and active movements of a large Warbler, and is said to have a fine song. Greater Blue-winged

and Hooded Pittas, a Saturnine Mocking Bird, Mexican Clarino, Pied and Blue-cheeked Barbets, Brazilian Hangnests, Silky Cowbirds, a Cedar Waxwing, and Yellow-billed Oxpecker completed the class.

The Oxpecker was an interesting exhibit, but it must be admitted that it did not show to advantage. The wooden perches of the show cage seemed unsuitable as a resting-place for a bird with feet and claws adapted for clinging to the broad backs of cattle and game animals, and would have been better replaced by a rough log.

The class for the larger species was won by Mr. Sawyer's pair of Roul-Roul Partridges, another very fine exhibit which attracted much attention and favourable comment. It must be twenty years since this species was last seen on the show bench in this country. A Steller's Jay was another species which has been seldom seen here. It was steady and well shown, but needs good light and ample space to display the fine purple and deep blue of its plumage to full advantage. The class also contained Mrs. Draper's rare Geng Jay, a Wandering Tree Pie, Occipital Blue Pie, and Yellow-headed Marsh Bird.

The section for Parrot-like birds drew a total entry of 80, but apart from the classes for Lovebirds and Parrotlets which accounted for half of this total, and contained many good examples of Fischer's, Masked, Peach-faced, Red-faced, Nyasa, and Abyssinian, a pair of Turquoise-rumped Parrotlets and an attractive hybrid Peach-faced \times Fischer's, the numbers in each class were disappointing. However, the quality of the exhibits left little to be desired, and a number of exceptionally rare species were benched, several of which had not previously been shown. Of particular note were Mr. Sawyer's Racquet-tailed Parrot, of which mention has already been made, and his Salawati King, a superb bird which might well have shared the supreme award, also Mr. Lawrence's lovely Long-tailed Parrakeet.

The class for Lories and Hanging Parrots also contained several rare and attractive exhibits, including a pair of Black-capped Lories in very fine condition, a Red Lory, Mitchell's, Musschenbroeks, and Ornate Lorikeets and a pair of Blue-crowned Hanging Parrots.

Very nice Plum-headed and Ring-necked Parrakeets were shown but Australian species were poorly represented, and the large species had only five entries, two hen Red-sided Eclectus, an Orange-winged Amazon, Roseate Cockatoo, and an African Grey.

K. A. NORRIS.

NOTE

Since writing the above report I have had an opportunity to read Mr. Seth-Smith's notes on the previous National Show, which appeared in the January/February, 1955, issue of this Magazine.

Unfortunately I was not able to visit the show on that occasion, but

it appears that a pair of Oxpeckers were then exhibited, and Mr. Seth-Smith and I have formed precisely the same impression of these birds when confined in a show cage.

It is a somewhat remarkable coincidence that we should describe our impressions in almost identical words.

* * *

FEEDING SOFTBILLS

By W. D. CUMMINGS (Keston, Kent, England)

As many people seem to be put off keeping insectivorous birds because they think the feeding of them will be too messy and complicated, I thought it might help to dispel this notion if I put on paper my own experience with various species.

Obviously, nowadays, one must bear in mind economy when feeding fruits and it is with this in view that I offer the following suggestions on food diets. Aviculturists still shudder at the thought of the trouble and expense involved in keeping softbills, but it is not so. When their basic requirements are known, also alternatives or extras, one can create a system, and feeding becomes a routine almost as simple as filling up a seed hopper.

Softbills generally, through their necessity to hunt for their varied food supply, and consequent agility, are perhaps more intelligent than seed-eaters—Psittacine species apart. They consequently give considerably more pleasure to their owners by their habits and colouring, and once the myth of the difficulties of feeding them is exploded, their advantages should exceedingly outweigh any other consideration. One starts meeting snags with softbills when one commences trying to breed them, but the excitement is all the more after a successful achievement.

I think it very important in feeding all birds to have a basic diet, and it is the same with softbills. I also consider that a little variety does a world of good. The "basic" is the everyday feed, and the "various" consists of extras when available. The basic food should be a complete food that satisfies a bird's hunger and needs, and is chosen for this purpose, and also because the bird likes it. The extras keep a bird in tip-top condition.

When our softbills first arrived at the Keston Foreign Bird Farm, I am afraid they ignore all basic diets and just have their particular likes and dislikes. We have to pander to them until they are fit enough to be brought slowly on to their permanent foods—in the case of Shamas and Dhyal Birds, their insectivorous mixture. When these latter birds arrive they revive only on the sight of live food. We supply gentles *ad lib* with a few mealworms, two or three a day each. They have insectivorous mixture by them all the time. After picking up we

reduce the live food after making sure they have taken to the insectivorous mixture. It is important that the latter should remain moist and appetizing, and I advise only as much should be given every day as a bird will eat. It can be moistened daily with grated carrot.

I should stress before I continue that you must be sure that fruit and soft food is not kept where the sun can dry it, and especially in the summer one must ensure that the food table is in a cool place where the food will keep fresh.

To continue with Shamas and Dhyal Birds—once they have put on a little weight and are fit, a diet of insectivorous mixture and gentles daily (a couple of dozen) and a few mealworms occasionally, especially when moulting (about six at a time) should keep them in the best of health. They seem purely insectivorous and the only fruit I have found they are very fond of are elderberries, and these I can recommend for all softbills and there is no limit to the amount one can give—but they must be ripe.

Apart from food requirements, they must have natural perches for their feet and a bath daily. I don't recommend putting them out into outdoor aviaries until they have moulted out in captivity, and then both Shamas and Dhyal Birds do very well in planted aviaries for the summer, but not together.

For all soft food eaters I thoroughly recommend finely chopped cooking dates. I find they all like them, and they are very nourishing. These I give daily to Fruitsuckers, Sugar Birds, Waxwings, Glossy Starlings, Hanging Parrots, Bulbuls, and Mynahs. This is part of their basic. Apart from dates and soaked currants I find Waxwings very fond of a little bread and milk daily. I cannot get ours on to anything else. Starlings, apart from dates, have a basic of insectivorous mixture and gentles, and a few mealworms, not more than half-a-dozen occasionally. Apples, sliced and pushed through the wire netting, and the dates are the only fruits they seem fond of. I also give them bread and milk daily. I do consider they need mealworms to bring them into breeding condition, as do all the insectivorous birds, but gentles are sufficient to keep them fighting fit, and safer.

Mynahs are—as are Pekin Robins—omnivorous, but a basic of insectivorous mixture, dates, bread and milk, apple, and gentles—especially in the chrysalis stage—are sufficient to keep them fit and healthy. Hill Mynahs are extremely fond of pear and grapes, but these are luxuries. If one is feeding them on scraps entirely their potato should be their basic.

Bulbuls, Fruitsuckers, and Sugar Birds (Yellow-winged) I find do very well on dates, sliced apple pushed through the netting, bread and milk (sweetened), pear and gentles, as basic, with either sugared orange, banana, or soaked currants alternatively as extras.

When we first receive Sugar Birds and Fruitsuckers I give them

nectar—consisting of a teaspoonful each of condensed milk and honey and a quarter teaspoon of Mellin's Food to a cupful of water—but as they always seem to neglect this after about six weeks in favour of the fruit and dates and the rest of the diet, I discontinue the nectar. I think a small pot of honey and water would probably be beneficial as well. They don't eat many gentles, and I think a few mealworms would be appreciated. Minivets are mainly insectivorous, and gentles and the mixture, with a few mealworms, would satisfy them.

Most of our fruit eaters we get out into outdoor aviaries here at Keston as soon as they are fit enough, splitting up the more tricky-tempered birds—to mix Sugar Birds, Bulbuls, Fruitsuckers, and one Dhyal Bird together in one aviary; in another, Pied and Bank Mynahs, Troupials, and Marsh Birds; and one Fruitsucker and Shama. They thus have plenty of fresh air and exercise.

Troupials and Orioles seem small eaters—both, I believe, being more insect than fruit eaters. Both like gentles (and mealworms), bread and milk, chopped dates, apple, and need insectivorous mixture moistened with shredded carrot. I find they hardly touch pear, orange, or banana.

The already mentioned diets, then, will give some idea of the fundamental foods necessary to their health, and cover all individual preferences of the species mentioned—and it could also be safely and beneficially given to any insectivorous or fruit-eating birds, as the case may be.

* * *

LONDON ZOO NOTES

By J. J. YEALLAND

During January Professor M. A. C. Hinton brought home a Kestrel that had flown on board the ship in which he was travelling when it was some 400 miles to the westward of Colombo. The bird, a female, looks very like the Kestrel of this country which, of course, ranges as far eastward as western Siberia and southward in winter as far as the Gold Coast, Tanganyika, Arabia, and north-western India. This specimen appears too pale to be the race (*objurgatus*) inhabiting southern India and Ceylon.

Squadron-Leader K. C. Searle sent a gift of two Water Cock (*Gallicrex cinerea*) and three Eastern Greenfinches (*Chloris sinica*), sometimes called by the dealers the Eastern Goldfinch.

Miss Knobel has presented a Malabar Mynah (*Sturnia malabarica*), also known as the Malabar Starling or Grey-headed Mynah. Two Cockatiels have also been presented. The donor called them "Quettels", a name I have been unable to trace, and evidently one of the Australian local names.

Three Jabouille's Jungle Fowl (*Gallus g. jabouillei*), new to the Collection, have been deposited. This is the race from northern Indo-China, first described in 1928 by Delacour and Kinnear. An Elliot's Pheasant and two Chestnut-eared Aracaris (*Pteroglossus castanotis*) have been received in exchange. This species of Aracari has been exhibited in Regent's Park only once before: there are two forms, this one inhabiting a rather small area in north-western South America and the other, *P. c. australis*, having a fairly wide distribution further south.

A Black-headed Plover (*Sarciophorus tectus*) has been purchased and a Black-footed Penguin bred in the Gardens.

The Cereopsis Geese are nesting; the Emu eggs and those of the Ceylon Fish-owls were again infertile.

A Red-necked Grebe found exhausted in Sussex was brought in a few days ago. It is already much stronger and feeding well, so if and when it recovers the waterproofing of its plumage it will be released.

* * *

COUNCIL MEETING

A Council Meeting was held on 14th March, 1956, in the Council Room, Zoological Society of London.

SOCIETY'S MEDAL

The Society's Medal was awarded to:

Mr. E. J. Boosey, for breeding the Chestnut-and-Black Warbling Finch (*Poospiza nigro-rufa*).

Dr. S. B. Kendall, for breeding the Timor Cockatoo (*Kakatoe sulphurea parvula*).

ARTHUR A. PRESTWICH,
Hon. Secretary.

* * *

BRITISH AVICULTURISTS' CLUB

The Hon. Secretaries gave a Dinner at the Rembrandt Hotel, on 13th February, 1956, to celebrate the 10th Anniversary of the formation of the Club.

The following Founder Members were present: Miss P. Barclay-Smith, W. D. Bell, Captain A. A. Clarence, Dr. E. Hindle, G. T. Iles, H. J. Indge, F. T. Jones, Miss E. M. Knobel, Miss M. H. Knobel-Harman, P. H. Maxwell, D. Seth-Smith, A. C. Soanes, and E. N. T. Vane.

* * *

The fifty-first meeting of the Club was held at the Rembrandt Hotel, Thurloe Place, South Kensington, S.W. 7, on Wednesday, 14th March, 1956, following a dinner at 7 p.m.

Chairman : Miss P. Barclay-Smith.

Members of the Club : P. C. Bath, Hylton Blythe, Mrs. V. M. Bourne, J. O. D'eath, Miss S. A. Fothergill, Miss D. Gask, F. Grant, W. C. Hall, H. J. Harman, M. Scott Henderson, Dr. E. Hindle, H. J. Indge, F. E. B. Johnson, F. T. Jones, Miss E. M. Knobel, Miss M. H. Knobel-Harman, Mrs. E. M. Lonsdale, F. Mosford, G. S. Mottershead, S. Murray, Sir Crawford McCullagh, Bart., K. A. Norris, A. A. Prestwich, D. M. Reid-Henry, S. Sanderson, R. C. J. Sawyer, D. Seth-Smith, A. C. Soanes, T. Spence, E. O. Squire, E. N. T. Vane, N. S. Walker, C. H. Wastell, Mrs. C. H. Wastell, Mrs. G. Wheatley.

Guests : J. Bailey, Dr. E. V. Baxter, Miss L. M. Connell, S. A. Croucher, Mrs. S. A. Croucher, Mrs. F. Grant, Mrs. F. E. B. Johnson, Dr. S. B. Kendall, R. G. Kirkham, Mrs. G. S. Mottershead, Miss M. F. Mottershead, Mrs. S. Murray, L. D. Rowe, Mrs. K. C. Searle, Mrs. D. Seth-Smith, N. R. Steel, Mrs. H. M. Vane.

Members of the Club, 36 ; guests, 17 ; total, 53.

The evening's programme was advertised as a *conversazione*, but it proved to be a surprise presentation evening. First the President of the Society, Mr. David Seth-Smith, drew attention to the fact that it was the 10th Anniversary Meeting of the Club. He said that to mark the occasion it had been decided to present the Hon. Secretaries with "a token of our gratitude and great appreciation". This took the form of a large Dresden china parrot which he handed to Mr. Prestwich. In the unfortunate absence, due to illness, of Miss Kay Bonner, Mr. Prestwich accepted on her behalf a Victorian bouquet of freesias from the hands of Mrs. Seth-Smith.

After the Loyal Toast the Chairman said she had very great pleasure in proposing the health of the Club's most distinguished member, Dr. Edward Hindle, who was celebrating his seventieth birthday within the next few days. In a very gracious reply the Doctor paid the Club a great compliment when he said for him one of the happiest and most fortunate things he had ever done was to become a Founder Member. A large birthday cake was then produced, and the members and guests rendered the usual birthday refrain in a manner somewhat unmusical.

Mr. Hylton Blythe said he would like to take the opportunity of asking Dr. Hindle a non-avicultural question. Under what circumstances had he introduced the Golden Hamster into England? The Doctor gave a short history of its discovery and re-discovery in Aleppo and an account of the first breeding in captivity in 1929. Since then many hundreds of thousands have been bred, and he admitted that

he was indirectly responsible for all the Golden Hamsters in this country.

The next meeting of the Club is on **9th May**.

ARTHUR A. PRESTWICH,
Hon. Secretary.

The Hon. Secretaries tender their warmest thanks to the many members of the Club who so generously contributed to the presentation fund. Their expressions of appreciation, both personal and collective, are very greatly valued.

KAY BONNER.
A. A. PRESTWICH.

NEWS AND VIEWS

In the New Year's Honours List A. G. Glenister, author of *The Birds of the Malay Peninsula, Singapore, and Penang*, was appointed C.B.E.

* * *

The few breeders with blue Masked Lovebirds have reported very disappointing results for last year—the number of adults lost very considerably exceeded that of young reared. It is, therefore, the more heartening to learn that R. G. Kirkham, Dublin, fully reared eleven.

* * *

A. H. Isenberg, California, reports some very interesting breeding results for 1955 :—Fully reared, 6 Indian Brown Robins, 2 Mexican Jilgueros (*Myadestes obscurus*), and 1 Grey Struthidea. Others to nest were :—Ixulus, five young ; Black-capped Honeyeater, nest built ; Satin Bower-Bird, eggs ; Spreo, young ; Quetzal.

* * *

The Spotted-breasted Oriole (*Icterus pectoralis pectoralis*), of Central America, has unaccountably appeared in Miami, southern Florida, about one thousand miles from its natural habitat. The colony, which seems to be well-established, is believed to number about one hundred. It has been suggested that its origin lies in escaped or even liberated cage-birds.

* * *

Kenneth Smith, Superintendent, Paignton Zoological and Botanical Gardens, sailed in the S.S. *Arakaka* from Liverpool to British Guiana on 17th February, and expects to return in May or June. The main purpose of the visit is to collect macaws, parrots, caiques, etc., to re-stock the newly-renovated Parrot House, also to get a really large and varied collection of reptiles for the Reptile House and Aquarium building which is also being completely renovated.

L. J. Bettison, British Columbia, writes : " I have had quite good luck in breeding Lovebirds this winter. The temperature is about 5° above zero, but I manage to keep the aviary up to 60°. I have reared Peach-faced, Masked, and Fischers so far, also some Strawberry Finch-Silverbill hybrids. At first I thought they were Chestnut-breasted and Strawberry Finch, but now I feel sure they are half Silverbill. They look like the Silverbills, but have red rumps : they sing quite nicely."

* * *

H. Murray writes : " It may be worth recording that the young from the Cordon-bleu-Blue-breasted Waxbill cross are fertile when crossed back to the Cordon-bleu. These Waxbills are, of course, so closely related that the young can hardly be regarded as hybrids." Some of the birds bred are : Cockatiel, fourteen from two pairs ; Bourke's, three, the parents were a young pair ; Nyasa Lovebird, one reared ; Green Cardinal, three really good young ones reared ; Red-eared Waxbill, young flying but not fully reared.

* * *

J. H. Reay has a Golden-fronted Fruitsucker that flourishes and continues in rude health on a diet of half an orange sweetened with caster sugar (incidentally, the orange is placed in a small basin to obviate it getting on its feathers) and anything up to two dozen mealworms per day. As Reay says : " Could anything be more simple to keep ? " This bird, which has been in Reay's possession for nearly nine years, has the run of the house, is a charming pet and a wonderful singer.

* * *

J. Dalborg-Johansen, Odense, records the following breeding successes in his bird-room during 1955 : Madagascar Lovebird, seven reared by one pair ; Nyasa Lovebird, five ; Masked Lovebird, three split-blue and six so-called yellow ; Blue-rumped Parrotlet, six young reared by the cock unaided following the death of the hen when they were only five days old ; Lineolated Parrakeet, three reared after two previous failures when the young were deserted at about ten days old ; white Java Sparrows ; white and cream Zebra Finches ; and a few Painted Quail.

* * *

J. H. Reay reports for 1955 : " The only birds reared were four very nice Barrabands and fourteen Bourkes from two pairs. The Plum-heads were again disappointing, both pairs laying infertile eggs. The two pairs of Rock Peblers showed no interest at all in their nest-boxes. It was the same with one pair of Many-coloured ; the

other pair, however, did lay three eggs, but made no attempt to incubate them. There was no increase with the Gouldians, and when they do start nesting there are several losses to be made good."

* * *

The Bourke or Bourke's Parrakeet? A member inquires why in my *Records of Parrots Bred in Captivity*, I refer to *Neophema bourkii* (Gould) as the Bourke Parrakeet. Really it is just a matter of preference.

English aviculturists usually call this species Bourke's Parrakeet, whereas Australian aviculturists and ornithologists almost invariably call it the Bourke: a few, however, use the less common Pink-bellied or Blue-vented—Mathews always used the last. Old-time trappers apparently called it, quite erroneously of course, the Night Parrot. This Parrakeet was discovered by Major (later Sir) Thomas Mitchell, naturalist and explorer, on the banks of the Bogan River, New South Wales, in 1835. It is first mentioned, under the bare name *Nanodes Bourkii*, in his *Three Expeditions into the Interior of Eastern Australia*, vol. i, p. xviii, published in 1838. It is here merely listed amongst the specimens deposited in the Australian Museum, Sydney.

Major Mitchell built a stockade near the junction of the Bogan and the Darling: this he named Fort Bourke after the then Governor, His Excellency Sir Richard Bourke. Thus, this Governor of a century and more ago has his name perpetuated by a thriving township and by one of the most charming Parrakeets.

* * *

ROUND THE ZOOS

Belle Vue, Manchester.—Arrivals, two King Penguins, young birds presented by the Edinburgh Zoo.

Paignton Zoo.—Arrivals, a Great African Wattled Crane (*Buggeranus carunculatus*) from Northern Rhodesia—believed to be the only specimen in Europe, certainly the only one in Britain; three Spur-winged Geese; a Tawny Frogmouth, presented by the London Zoo; and a Richardson's Owl (*Aegolius funereus richardsoni*) which was caught on the deck of a cable ship 150 miles off Cape Cod.

Glasgow.—A King Penguin was hatched but died after two days. The Penguin population has been increased to fourteen by a gift from the Edinburgh Zoo of two young Zoo-bred Kings and two Gentoos.

Rotterdam.—Arrivals, two Orinoco Geese, one Crested Duck, and various Sunbirds.

Wassenaar.—New arrivals include one Six-plumed and a pair of Magnificent Birds of Paradise; a pair of Crowned Pigeons; and two young (? Helmeted) Cassowaries.

The payment of subscriptions by money order is one of the most convenient methods open to members living abroad. It is, however,

most important to notify the Hon. Treasurer of such payments. In many cases the name of the remitter does not appear on the money order, with the result that there is usually a number of "unidentified" orders in hand. It thus sometimes happens that a request for payment of subscription is sent to a member who has already paid by this method, but omitted to notify the Hon. Treasurer at the time.

Listed on the cover are some money orders that have not yet been credited to the senders.

Will members who have not received receipts please examine this list, and in the event of their recognizing the brief particulars kindly inform the Hon. Treasurer.

A. A. P.

* * *

REVIEWS

FOREIGN BIRD KEEPING. By EDWARD BOOSEY. With photographs by ALEC BROOKSBANK. 342 pages. *Cage Birds*, London, 1955. Price : £3 3s. net.

Reviewing Edward Boosey's book, *Foreign Bird Keeping*, is one of the pleasantest tasks I have ever been asked to perform. In the first place the author is one of my oldest friends, and it is always interesting to read a book by someone you know. Secondly, many of the birds described in its pages are specimens with which I was personally acquainted at Keston ; consequently it is filled, for me, with memories of my very happy association with the Foreign Bird Farm for which Edward Boosey and his partner Alec Brooksbank are famous.

For instance, I well remember the Banksian Cockatoo illustrated on page 129, and I shall never forget the thrill of looking into a nest-box and seeing the brood of five young Blue-fronted Amazon Parrots, whose photograph appears on page 138, just before they were due to fledge, and realizing that these were the first of their kind ever to be reared in England.

Here is a book by someone who really knows what he is writing about. The author has wisely kept to those species which he has actually owned himself. He tells us what he knows and has been honest enough to say when his knowledge of a bird is not complete. There is, therefore, no fear of anyone being misinformed. Mr. Boosey's descriptions of the birds he has kept are not only informative, but lightened with amusing anecdotes. Each account is a fascinating word picture of the appearance and character of the bird in question. That is what makes his book such absorbing reading.

To anyone interested in foreign birds this work—the product, as the author himself states, of 40 years' practical experience—will be an essential part of his library.

The author is, of course, acknowledged as one of our leading authorities on parrot-like birds. I doubt if there is anyone living who has consistently bred year after year and generation after generation so many fine specimens of rare and beautiful parrakeets. The section on these birds alone, therefore, is a standard work of reference. It must be realized, however, that his experience of bird keeping is far wider than this, and the chapters dealing with finches, softbills, doves, and pigeons are every bit as interesting and instructive.

Like all good bird keepers, Mr. Boosey has what gardeners call "green fingers". His sympathetic understanding of birds and their ways is apparent all through his book. This ability to know your birds and to do the right thing at the psychological moment is, to a great extent, an inborn quality, but to those who wish to acquire it, I would say read *Foreign Bird Keeping* with care and you will become a better aviculturist.

A great asset, without which this book would not be complete, is the very fine selection of coloured and black and white photographs by Alec Brooksbank. Without exception, they are portraits of birds living at the Keston Foreign Bird Farm at one time or another. Knowing the difficulties he has encountered in taking these, and remembering what temperamental subjects the birds themselves can be, I can fully appreciate the infinite pains which Mr. Brooksbank has spent on producing these truly beautiful pictures. Nearly every bird dealt with in the text is represented by a photograph. There are 43 illustrations in full colour showing 58 species, and 71 black-and-white half-tones portraying 82 species.

There is a foreword by Viscount Chaplin, and a good general index as well as an index of Latin names of the birds.

The book is divided into five parts, namely: Waxbills, finches, and other seed-eaters; parrots and parrot-like birds; insectivorous, omnivorous, and nectar feeders; doves and pigeons; and the last section contains chapters on housing, general management, and diseases. It will, therefore, be seen that it is extremely comprehensive, and covers not only all the commoner kinds of foreign birds likely to come into the hands of the average aviculturist, but also a considerable number of the rarer species about which little information has hitherto been available.

D. H. S. R.

A GUIDE TO THE BIRDS OF CEYLON. By G. M. HENRY.
Illustrated by the author. Oxford University Press. London
Cumberlege, 1955. Price £2 2s. net.

This comprehensive and well presented book on the birds of Ceylon is not only a useful working handbook for the experienced ornithologist but is also excellent for the beginner for the author gives much useful

advice and explanation on the best means of observing birds, selection and care of field glasses, and so on.

In the introduction Mr. Henry states that serious study of the birdlife of Ceylon may be said to have commenced about a century ago and he gives a survey of the work that has been done and the books that have been published.

As is to be expected in a book by G. M. Henry it is profusely illustrated and the general principle adopted has been to depict the more colourful birds in colour and those of duller plumage by black and white drawings in the text. The author states that in the accounts of the species no attempt has been made to give exhaustive information and that the purpose of the book may be stated as the provision of a means of identifying birds in the field—mainly through the illustrations—and a framework of basic facts on which students may build their own observations. In this he succeeds admirably.

Mr. Henry has not adopted the new arrangement of Orders and families which has now been generally accepted which is a pity, even though he mentions that the book is not intended as a work on classification and nomenclature but as a help towards “enjoying the birds.”

There are no less than 30 coloured plates depicting 198 species, all of the high standard expected of G. M. Henry, and they are beautifully produced; also a very large number of black and white illustrations and a map of Ceylon. The very reasonable price of the book makes it well worth obtaining for the coloured plates alone, and it certainly should have a wide demand.

P. B-S.

* * *

CORRESPONDENCE

BREEDING OF SALVADORI'S DUCK (*Anas waigivensis*) IN NEW GUINEA

I thought you would be glad to know that I have bred the Salvadori Duck, which must be for the first time, as nobody has them in captivity with the exception of myself; I have twelve.

They live in small parties, being very pugnacious, and no other duck can show itself near the breeding pair. In this case the breeders are a trio, two females and a male. One duck has three babies, the other is still sitting. At this moment the youngsters are $3\frac{1}{2}$ weeks old. They are almost black and white in colour. It was noted that they frequently travel on the mother's back whilst swimming in the lake. They are an unusual duck and will dive quite deeply if startled and break the surface for 40 yards from where they dived.

I am glad to give you this first-hand information of what must be the first breeding of this rare duck.

EDWARD HALLSTROM.

2 WILLOUGHBY ROAD,
WILLOUGHBY, N.S.W.

(We hope Sir Edward Hallstrom will send further details of this first breeding with photographs for publication in the Magazine—ED.)

THE AVICULTURAL SOCIETY RECEIPTS AND PAYMENTS ACCOUNT

Year ended 31st December, 1955.

RECEIPTS				PAYMENTS			
	£	s.	d.		£	s.	d.
To Balance at Bank, 1st January, 1955	.	.	.	By Printing of Magazine	.	1,149	1 5
Ordinary subscriptions	.	.	.	Coloured plates	.	191	2 2
Arrears	.	17	12 0	Authors' separates	.	18	9 3
Current	.	764	14 7	Sundry printing and stationery	.	56	8 8
In advance	.	102	2 2	Printer's charges and expenses	.	9	3 1
Life membership subscriptions	.	.	.	Honorarium to Editor	.	100	0 0
Avicultural Society of America	.	.	.	Secretarial	.	52	0 0
Donations	.	.	.	Preparation of Index	.	10	10 0
Legacy	.	.	.	Newman Library Insurance	.	2	5 0
Sales of Magazines	.	.	.	Advertisements	.	15	0 0
Sales of <i>Australian Parrots</i>	.	.	.	Expenses at Council Meetings	.	7	2 0
Sales of <i>The Anatinae</i>	.	.	.	Medals and engraving	.	17	19 9
Sales of surplus books	.	.	.	Waterfowl Rings	.	23	11 6
Sales of waterfowl rings	.	.	.	Society's visit to Antwerp	.	10	5 1
Sales of coloured plates	.	.	.	Postages	.	28	17 10
Sales, Miscellaneous	.	.	.	Bank charges	.	1	0 2
Advertisements	.	.	.	Miscellaneous expenditure	.	8	14 0
Dividends	.	.	.				
				Balance at Bank, 31st December, 1955	.	1,701	9 11
						629	12 6
						<u>£2,331</u>	<u>2 5</u>

I have examined the above Account with the books and vouchers of the Society and certify it to be in accordance therewith. I have verified the Bank Balance.

LONDON.
1st February, 1956.

J. WATKIN RICHARDS, } Hon. Auditor.
Certified Accountant.

NEW MEMBERS

The twenty-three Candidates for Election in the January-February, 1956, number of the AVICULTURAL MAGAZINE were duly elected members of the Society.

READMITTED

J. RODGERS, 39 Fore Street, Totnes, Devon.

CHANGES OF ADDRESS

H. J. BATES, to 4146 Pacific Coast Highway, Waleria, Calif., U.S.A.
D. BEAN, to 46 Argyll Street, Corby, Northants.
Miss D. I. CAFFERTY, to 662 Wellington Avenue, Chicago 14, Ill., U.S.A.
D. B. HALL, to 3 Rowdeford Cottages, St. Edith's Marsh, Bromham, Wilts.
ANTHONY JACK, to Avenida da Liberdade 192, Lisbon, Portugal.
IVO LAZZERONI, to 524 South Dancove Drive, West Covina, Calif., U.S.A.
Miss A. REED, to Apt. 10, Queen's Court, 581 Jarvis Street, Toronto, Ontario, Canada.
C. T. RIDLEY, to Birdwarren Farm, Box 217, Varsity View P.O., Charleswood, Manitoba, Canada.
Mrs. V. RYCROFT, to 8 The Mead, Cirencester, Glos.
H. A. STAPLES, to 461 East Sacramento Avenue, Chico, Calif., U.S.A.

AMENDED NAMES AND ADDRESSES

R. A. NEWLAND, 93 Arne Avenue, Parkstone, Poole, Dorset.
P. W. TEAGUE, Rowlestone, Southdowns Road, Dawlish, Devon.
H. TEMLETT, Doves Rest, P.O. Box 37, Maseru, Basutoland, South Africa.

DONATIONS

(Coloured Plate Fund)

	£	s.	d.
G. D. LAKE . . .	3	3	0
A. LAMB . . .	2	2	0
F. E. B. JOHNSON . . .	1	0	0

UNIDENTIFIED MONEY ORDERS

Belgium

Schaerbeek, No. 5 (1955).
Antwerpen 1, No. 284.
Hamme (VI), No. 8.

Holland

Amersfoort, No. 202.

U.S.A.

Brookfield, Ill., No. 7-243605.
Seattle, Wash., Greenwood Sta., No. 12-627,067.

MEMBERS' ADVERTISEMENTS

The charge for Members' advertisements is ONE PENNY PER WORD. Payment must accompany the advertisement, which must be sent on or before the 15th of the month to A. A. PRESTWICH, 61 CHASE ROAD, OAKWOOD, N. 14. All members of the Society are entitled to use this column, but the Council reserves the right to refuse any advertisements they consider unsuitable.

WANTED]

Urgently, hen Bob White Quail.—D. B. HALL, Rowdeford School, Devizes, Wilts.

Aviculture, vols. i-iii.—WALTER STONE, Detroit Zoological Park, Royal Oak, Michigan, U.S.A.

Tavistock, *Parrots and Parrot-like Birds in Aviculture*, 1929 edition.—RAY THOMAS, 600 Sarbonne Road, Bel-Air, Los Angeles 24, California, U.S.A.

AVICULTURAL MAGAZINE, Vol. I, 1894-95 ; Vol. III, 1896-97. Third series, Vol. X, 1918-19, part 8 or complete ; vol. XII, 1921, part 5 or complete. Fourth series, Vol. I, 1923, parts 1, 2, 3 or complete ; Vol. II, 1924, part 2 or complete ; Vol. III, 1925, complete ; Vol. V, 1927, parts 1 to 8 or complete. All complete with coloured plates.

Foreign Birds, vol. i, 1935, vol. ii, 1936, vol. iii, 1937, vol. xv, 1949, vol. xvii, 1951.

Catalogue of the Birds of the British Museum, vol. i, ii, iii, iv, v, xxi.—C. AF ENEHJELM, Högholmens Djurgård, Helsingfors, Finland.

FOR SALE

What offers for 60 copies of AVICULTURAL MAGAZINE from January, 1947, to December, 1955, complete—as new—any reasonable offer accepted.—Hon. Mrs. G. BOURKE, Rotherend, Rotherfield Road, Henley-on-Thames.

A colony of Black-headed Conures, comprising a breeding pair together with their 1954 young one and three 1955 young. £45 the six birds.—A. A. Prestwich, 61 Chase Road, Oakwood, London, N. 14.

Cock-o-the-Rocks, one true pair of the extremely rare Scarlet (*Rupicola sanguinolenta*). Also a rebound, as new, copy of the *Monograph of Sun Birds*, by Shelley.—Prices and particulars, P. H. HASTINGS, 182 Sultan Road, Portsmouth, England. Phone 4272.

Books in exchange for Binoculars.—Cassell's *Canaries and Cage Birds* (leather bindings). Cassell's *Book of Birds* (4 vols.). Houlton's *Cage-bird Hybrids*. Naturalist's Library.—*Humming Birds* (2 vols., 1833), *Birds of West Africa* (1837). Miscellany of Natural History.—*Parrots* (1833), Russ's *Speaking Parrots*, Lyell's *Fancy Pigeons* (1881), Tegetmeier's *Pheasants* (3rd ed.), Barton's *Pheasants* (1912), Doyle's *Domestic Poultry* (oil colours).—W. FERRIER BROWN, 85 Yew Tree Road, Southborough, Tunbridge Wells.

Young Indian Ring-neck cock ; what offers for, or would exchange budgerigars or waterfowl.—MARK VINSON, Beeches Farm, Cowden, Kent.

3.206

Nat Hist

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AVICULTURAL MAGAZINE



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THE AVICULTURAL SOCIETY

Founded 1894

President : D. Seth-Smith, Esq.

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SCARLET TANAGERS.

Upper : *Ramphocelus bresilius*.

Lower : *Piranga erythromelas*.

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THE SCARLET TANAGERS OF NORTH AND SOUTH AMERICA.

Piranga erythromelas and *Ramphocelus brasilius*.

By D. M. REID-HENRY (Woodford Green, Essex, England)

It is to be hoped that our American readers will bear with me in the writing of this article. For them the matters that are here set down will in all probability be already well understood. The reason, therefore, will be to try and clear up a confusion that exists amongst aviculturists in other countries; for without doubt there are many foreign bird enthusiasts, particularly in the British Isles, who are unaware that there are two entirely distinct Scarlet Tanagers.

One of these is frequently imported, sold, and shown in Britain: it is so well known that I shall not attempt to go beyond a superficial description of its general appearance and habits, except where it is necessary to draw fine distinctions. This bird (*Ramphocelus brasilius*) is a native of eastern South America which migrates north in the non-breeding season. But it does not apparently enter the Northern Continent.

The adult male of this species has black wings, scapulars, and tail (which is graduated), and the rest of the plumage is of the most vivid, deep scarlet. The feathers of the head are short and rather stiff, and give the appearance similar to that of satin velvet. Because they tend rather to stand erect, there is a texture about the head that gives an added depth to the brilliance of the colour. This character is one in which the difference between the males of the two species is most noticeable. Apart from the head, the red feathering lies fairly flat, but there is a high, silky sheen on all the red parts. The bill is black for the most part, but the base of the lower mandible carries a large, oval white patch. This appears bulbous and swollen.

The female is a reddish-brown bird with dark brown wings and tail, and the bill lacks the white patch. The juvenile plumage is similar to

the adult female, but in the case of the male there is a suggestion of the brighter colours to come already apparent.

Mr. Alec Brooksbank in his *Foreign Birds for Garden Aviaries*, refers to the nest of this bird as neat and dome-shaped, and he describes the eggs as rather like those of a Song Thrush but smaller.

The home of this bird is usually in low, marshy country, and it does not appear to be found far from the coast or in hilly country. The food consists of insects, grubs, spiders, and almost any type of fruit.

We turn now to the Scarlet Tanager of eastern North America (*Piranga erythromelas*). It differs fundamentally in that it is what is termed a "hard-bill" or seed-cracking bird. The shape of the bill is somewhat like that of a finch, only longer, and there are two festoons or "teeth" on the cutting edge of the upper mandible. This character is not well reproduced in the accompanying plate, but I was at pains to show it in the original! In colour it varies from a straw yellow to olive green and it is pointed; the curve of the culmen is shallow, whereas in the case of *R. brasilius* the culmen is much straighter for most of its length with a much more pronounced tendency to hook at the tip.

The colour pattern is where the easiest ground for confusion occurs. In both species it can only be described as vivid scarlet and black. Moreover, in both, the same areas correspond in colour to a large degree, and it is only when one comes to examine the two side by side that the very essential differences become apparent. Reference to the plate will show plainly the longer wings, and slightly forked tail of *P. erythromelas* in contrast to the short wings and rounded tail of the other. On the other hand, it does not very well illustrate the greater extent of black on the scapulars of *R. brasilius* which are almost entirely of that tone, whereas only about half the number of scapular feathers on the lower figures are black and the remainder are red.

I have tried to show the differences in the colours of the scarlet areas, and that the bases of these red feathers differ. In the case of the upper figure these bases tend to be yellow, but in the lower they are whitish grey.

The red of *P. erythromelas* is not so deep in tone; it has not the silky sheen, and the feathers are of a much softer texture. The red does not in any place tend to crimson as it does on *R. brasilius*, but it tends rather in the opposite direction in the spectrum, towards a kind of pinkish-orange. This in itself inclines to vary in different individuals.

This brilliant plumage is discarded for the winter, and the male becomes like the female except that he retains the black wings and tail. The juveniles of this species are like the adult female, but the cock by September of their first year are beginning to show black on the lesser and medium wing-coverts.

During the period that this eclipse endures, the birds migrate south to Peru and Colombia. There they could well be caught for export, and it is probably very fortunate for the birds that the finery is not evident. If it were so, doubtless many would be taken and sold to dealers. As it is the native bird-catchers in those parts do not consider such a dull coloured little bird to be worth the trouble.

When I had this article in mind I asked several of the best-known British aviculturists if they had ever had a specimen of this Northern Tanager, and I was only able to find two people who were really well aware of its existence. One dealer said he had once had a Tanager with a yellow beak, but as he had not realized the significance of this peculiarity he had parted with the bird and he had no exact knowledge of where it had gone.

Monsieur Jean Delacour informed me that the London Zoo had known a few individuals some years ago, but he was not in a position to know how they had progressed. It would appear, therefore, that very little is known about this bird in captivity, and I would very much like to hear from any member in the U.S.A. who has ever got to know them well in the wilds of their own land.

Unlike *R. brasilius* this Tanager builds a very sketchy nest of untidy and unsubstantial appearance, usually on a horizontal stem of a tree. The site may be in heavily wooded country on high or low ground, or the bird may choose to build in an orchard close to human habitation. The young are fed mostly on insects, but large quantities of berries are also consumed, and the birds have a particular liking for catching early flying moths after the manner of Flycatchers. These moths, their larvæ and pupæ are eagerly sought out and eaten, apparently in preference to most other foods available at the same season, and for this reason the bird is regarded with great favour by cultivators of gardens and fruit trees in quite a more practical sense than merely for its aesthetic and ornamental value to their grounds.

* * *

ON ESTABLISHING STRAINS OF BREEDING PARRAKEETS

By E. N. T. VANE (Great Missenden, Bucks, England)

As Professor Joad would have said, "It all depends on what you mean by a strain." Although we have certain species of psittacine birds that have bred in our aviaries for a number of years, there is not a single well-established strain of any particular species in the country. There is no place to which, in the event of an accidental loss, a breeder can turn with confidence that he will be able to replace such a deficiency at any time.

It is not impossible to establish a strain from one pair of birds, for instance the Brown Crossoptilon was represented in captivity by two hens and one cock in 1866. From this modest start over two hundred were being reared annually three years later, and it is a fact that all the Brown Eared Pheasants throughout the world to-day originate from these three birds. Obviously this was an exceptional case and one not likely ever to recur, especially among such vigorous and energetic birds as parrakeets. My conception of a strain is something like a stud of healthy breeding birds consisting of about twenty pairs such as Mr. Ezra built up with the lutino Ringneck. Until we have some serious minded aviculturists capable of undertaking such a task we shall not really be in a position to talk about strains.

In years gone by there have been repeated attempts to organize some control over the breeding of these birds, but it has never worked out so far, and only by building up a substantial stud under one control can any hope of real success be achieved. We already have one expert advising novices to start rearing mongrel hybrid lovebirds to introduce new colours, even before we have reared a single pure bred abnormal coloured specimen in the country—a most regrettable and deplorable piece of folly. However, in view of the restriction on the import of psittacine birds, it is most desirable that no effort should be spared to build up stocks of the lovely birds we have in our aviaries to-day. Although the ban exists, it appears to be more reasonably administered to-day than formerly, and, provided the privilege is not abused, one can obtain a permit to import a bird within reason on certain conditions, which should do much to enable breeding stocks to be maintained.

Importing parrots is an undertaking fraught with so many snags that it is next to impossible to get any respectable birds in on a commercial basis. Private importation of very small numbers, if equally risky, is much more likely to be considerably less a source of suffering and untimely death to the birds, and consequently much more satisfactory, so long as after doing so there is reasonable likelihood

being able to produce by breeding some good stock for further distribution at home.

In 1939 there were at least two varieties of birds established as aviary-bred strains, namely the lutino Ringneck and the yellow redrump, which existed solely through the efforts of aviculturists. Accidentally, both of these varieties were sex-linked in inheritance. There were a number of really good specimens about, but in view of this factor, cocks were scarce. Where have these birds got to to-day? Both are very scarce and definitely require careful conservation if they are to remain.

In dealing with the lutino Ringnecks it is a most difficult and tedious business to build up a good breeding stock owing to the fact that they cannot be sexed with certainty until they are almost three years old; in any event they rarely breed prior to this age when they obtain full adult plumage. To reach the third generation therefore, when trying for a special characteristic, is going to take almost ten years. It is not necessary for some genetical expert to point out that the young may be sexed from birth if a sex-linked lutino cock is paired with a normal hen, as all young hens will be lutino and all the cocks will be green split-lutino, and so sexable by colour alone. Any poultry breeder or budgerigar breeder knows that. What he could tell us is where to obtain a spare lutino male. There just are not any about, and in any case the birds rarely breed before maturity, as already mentioned.

Unless some aviculturist, or better still some aviculturists, can gather some half-dozen pairs that really do breed regularly, there is a real danger that these birds may be lost to us ere long. If the birds continue to be dispersed all over the country in "believed" pairs which are probably of the same sex, where one may die and cause a setback of three seasons in replacement, quite apart from capital outlay which is heavy, then there is a very good chance that enthusiasm will die and the strain may be lost altogether. Many of the birds are eagerly sought after by foreign markets, with an equally serious drain on our own resources.

Consider the other side of the picture for a moment. It is indeed an expensive and challenging task to retain a dozen pairs of high priced birds housed in large costly aviaries for a minimum of three years. During this period they are consuming food and require labour to be maintained; apart from the risk of loss through many causes, plus the disappointment of disparity in the distribution of the sexes, is it surprising that the finished product is expensive?

When a census of parrots was taken in 1947 there were 42 lutinos recorded. It is doubtful that there are as many as six true breeding pairs of pure lutinos existing to-day. There is one more little snag before we leave lutinos, that is, there are also non-linked lutinos in

existence although they have probably died out altogether in this country. Mr. Ezra proved this in 1933, when two lutino parents reared three green youngsters. It is just one of those little things.

The position with the glorious "Blues" is a little more promising. There are now three proved breeding pairs and a fourth should be old enough to breed next year; from these birds ten young were reared this season in England. I believe David West reared two in California also, but they, of course, are outside the scope of these notes. At the moment all these blue birds are in the care of three breeders, and therefore have the advantage of some slight provision against accidental loss; and every effort is being made to build the strain up before they become too dispersed. Naturally, it will be essential to introduce new blood to maintain stamina, and there is also the possibility of other colours, but this is very much a secondary consideration at present.

Alexandrines are not everybody's bird. They are large, although quite content with an average sized flight, they are destructive and noisy. All the same they are very fine birds, and great favourite with many. The late Captain Veitch was to be greatly commended for his efforts on this bird's behalf; it was a great pity he was unable to continue this work. I do not know what became of his stud of Alexandrines, but I doubt that they passed as a complete nucleus into the possession of one aviculturist prepared to concentrate on building up a strain.

Yellow Redrumps were a simpler proposition. Like their normal relatives, they are easily sexed in the nest, comparatively prolific (one pair reared ten very good young here this year—whereas a Ringneck usually has four or five and more often three), and finally they can rear good young when only one year old themselves. They were at one time fairly numerous. Where are they all to-day? Probably many have been attracted to the overseas market, but they are without doubt rare here at present and the demand far exceeds the supply. Again, I think that the trouble is due to failure to maintain a really substantial stock in one or more centres. Many quite small breeders had pairs at one time, indeed many people had them who did not understand what they were really doing. Some seemed to think that if they kept a normal Redrump cock in the same flight as a yellow hen he became split. Some went even further and considered that if there was a yellow bird in one of their flights all Redrumps bred in the neighbourhood would be split; that is judging by the number of cocks sold as "split birds" which never bred a yellow youngster in their history. I have acquired some of these birds which, when mated to a yellow hen, still had all green youngsters; it was pretty certain therefore that the cock was not split. A normal hen cannot be split as it is a sex-linked factor, and she is 100 per cent normal. Well, he

we have the writing on the wall. Let us try and increase the numbers of yellow Redrumps before the opportunity passes.

The safety of the Princess of Wales is rather taken for granted to-day, in fact many people ask when their price is coming down. Is it safe? The exceptional summer of 1955 appears to have been an off year for them, though through no fault of the birds. The mid-May blizzard carried off my first rounds, and mice accounted for two more very nice broods of four. These pests entered the nest through the birds' entry hole, there was no other way in, and in both cases made nests under the bottom of the proper nest, with the result that the eggs or young fell through and were smothered or lost. So in spite of a good season with most species, the most regular breeders of the lot had a record "low" with only three fully reared. To be as helpful as possible all these were cocks. Mrs. Clark, of Bromsgrove, tells me that although she usually rears about twenty, none were brought up this year through various, unexpected happenings.

In spite of the fact that there are several people who own an odd pair of these delightful birds here and there, the number of recorded successes with them in these isolated cases are few. When these birds once became rediscovered in Australia, a few fortunate aviculturists in this country secured some specimens for themselves, only to discover in the majority of instances, they were not so fortunate after all, as the birds sent them were often guilty of some secret vice—such as egg eating, non-sitting, or infertility—and were really nothing more than useless discards unloaded on the overseas market from their homeland. One has to be careful therefore when acquiring these birds to ensure that they are of good origin; the best plan is to buy good young birds of the year from parents than can be inspected, the disadvantage then being uncertainty of sex, a very difficult item with immature birds. One particular fault against which the unwary should be on guard is the so-called "snub-billed" or undershot beaked bird. A number of these were at one time pushed on the market very cheaply, with the explanation that although some of the young might inherit the disfigurement, others left the nest perfectly all right. The defect is hereditary, and can be transmitted by apparently normal-looking birds bred from parents with this defect. Whenever buying Princess of Wales therefore remember Ruskin's dictum: "There is hardly anything in the world that some man cannot make a little worse and sell a little cheaper, and the people who consider price only are this man's lawful prey."

I know of no one trying to develop reasonable stocks of either of the other Polyteline parrakeets. True, a number of scattered breeding pairs rear a family each year—too few, of course—but is any serious attempt being made anywhere to establish, say, as many as three regular breeding pairs in one collection? Both the Barraband and Rock Peplar

are most desirable birds and those who keep them almost invariably become very staunch adherents to the breeds.

Both Crimson-wings and Kings are now very scarce. Neither were ever exactly free-breeders, except when the late Duke of Bedford first had them many years ago and wrote a most enthusiastic article about Crimson-wings being the easiest parrots of all to breed ; a statement he unreservedly withdrew later, and not very much later either.

Individual pairs of Kings were much better behaved. To rear really good young, however, they require a large flight. They are one of the most showy birds existing and a particularly attractive feature about them is their silent, owl-like flight, reminding one, if close enough to hear it, of the rustle of a taffeta gown. Through Sir Edward Hallstrom's good offices I now once again have two pairs of these birds. Both pairs are still young, as they were imported before fully adult, and both pairs succeeded in rearing excellent young last year, one pair being double brooded. The full significance of this success is only appreciated by those who have tried importing these birds from the Continent, where it is far more usual to get an adult cock and what eventually turns out to be a young immature cock, with the usual result of scarcity of hens. In most cases there is nothing you can do about it. Needless to say with this promising, if slender start, it is hoped to produce a few of these magnificent birds in the next few seasons.

So with the even more handsome Green-wing King, it is sincerely hoped that the small stock so laboriously built up by our late president, Mr. Ezra, may yet be preserved and multiplied. Should it be decided to disperse the Foxwarren collection it will be a thousand pities and an irreparable loss to aviculture if one individual cannot be found who is capable and willing to undertake the responsibility of continuing this work. When I last saw them over a year ago there were two breeding pairs and I believe five immature birds. Apart from the pair in the Zoo, which also breed fairly regularly, these are the only specimens left in the country, and to split up this nucleus of great possibility, before the numbers are substantially increased, would in all probability end all chances of retaining a source of possible future supplies for English aviculture. It is my firm conviction that only by adopting this long-term view is there any real chance of eventual success.

For a good many years we have had pretty reliable breeding results from a number of the Broadtail Parrakeets ; notably among Golden-mantle, Red or Common Rosellas, Mealies, Stanleys, and to a lesser degree Pennants and Many-colours. To my regret, when the ban was removed I disposed of a number of really good pairs of these more commonly kept species, intending to concentrate on the rarer species. With the return of restrictions I found it most difficult to replace these

birds with others of equal quality. Although I have rather more rare pairs than I can comfortably cope with, I am still of the opinion that unless a number of pairs are maintained as breeding studs, there will be a definite danger of their being in a rather insecure supply, to say the least, and certainly they will run the risk of deterioration.

Many-colours reproduced their progeny with me for many years in fairly good numbers, but I did not keep more than three breeding pairs at any one time. Then one year an ancient pair died, and the following season two cocks and one hen were lost through illness, or accident, with the result that instead of rearing between a dozen to twenty young birds, I was reduced to twos and threes. It is proving quite a problem to re-establish a fair breeding stock ; this illustrates the point that two or three pairs of a kind are not enough to feel that a species is " safe ".

Probably the most likely subjects to respond to attempts to build up real strains are the Grass Parrakeets and the Lovebirds. I am definitely not asserting that this will be easy, although on paper it can be made to appear ridiculously so. How many novices have started out to make a small fortune from their hobby, and how many have given the project up in disgust after a very short time through starting off on the wrong foot. " Budgerigar mathematics " make it a simple proposition. You put up twenty pairs of Lovebirds in small cages used " control flights " (Budgies no longer need these now that they are bred in cages). These pairs average, say, six young per pair in two broods each season. You can easily get an average of £4 per head for these. Seed will only cost five shillings a week for that little lot. You are bound to net about £400 a year. It only wants an Al Read to take the lid off that one. But you really do read such things.

Nearly twenty years ago I obtained two lutino Nyasa Lovebirds of unknown sex. They both turned out to be hens, and eventually some split young were reared. Every effort was made to breed a full lutino without success. I even loaned the split birds to be mated with other lutinos after I had the misfortune to lose mine ; but it all came to nothing, and the whole of the stock was lost during the war. When the opportunity came to have the one lutino in the country from the collection at Woburn, I was only too eager to try again. Last season the first lutino ever bred here was raised after three attempts. Now I do not think lutinos are established here yet, but someone else is already telling others how they can breed other species of lutinos. They will get no help from me, I abominate hybrids ; even when they are undoubtedly beautiful birds that have only been bred from parents mated together " *faute de mieux* " I still cannot bring myself to admire them unreservedly.

Three yellow young were hatched and reared to the point of leaving the nest, when one died. Two reached full independence, but just to

be awkward one was killed fighting, and for the benefit of those who may not know, this is a vice I have never met with or heard of among Nyasas, the little beasts must have been jealous of his golden raiment.

Perhaps I should record that the inheritance factor is not sex-linked as was expected, indeed as we were clearly informed it was. But this has been definitely proved otherwise, and it is a normal recessive inheritance factor. A pair of split birds mated together had four eggs in their first round, three were hatched and reared, all normal in colour. The fourth egg had a fully developed pink-eyed embryo dead in shell. In their second round there were again four eggs, three were hatched and fully reared, all green. The fourth egg was clear. Are the lutino embryos weak? The lutinos successfully reared were from the adult cock mated to one of his split daughters. However, there are now more than twenty of these lutino bred birds to experiment with, and although it means a considerable amount of expansion to go on persevering with them, expand we must or die.

Fischer's are prolific birds and many have been bred since they became available once more. But I wonder just how many people have bred, say, as many as twenty or even more than a dozen this season. Is there anyone seriously trying to attain an output of as many as 100 or even 200 really healthy Fischer's per annum? Even with Fischer's I have no hesitation in saying that I would consider this a very worthy objective.

Masked Lovebirds are about the most difficult of them all to sex. They are frequently only too pleased to mislead their wishful-thinking owners by behaving like a true pair whilst all the time they know they are of the same sex. Neither is the pelvic bone test really reliable. Another failing is their eagerness to fight at any time on any provocation after weeks of peaceful association together. In this climate at least, Masked cannot be kept on the colony system, as it invariably ends in chaos with a number of fatalities; it is generally the cock who are the victims too. In this connection I have heard of "rogue hens" who will kill any male who comes near them, though I have never come across this trait personally.

In the wonderful Californian climate, however, Masked Lovebirds are normally kept in colonies with a plentiful supply of surplus nesting sites, and they multiply exceedingly, whether green or blue; both are equally abundant out there. Although the blues were first discovered and bred in this country, they have never flourished here; it was not until they were sent to California that they bred in any numbers. Now they are reputed to be bred in large numbers in Japan also. Again, climatic conditions are favourable, but from reports regarding these birds of Japanese origin which have come via the Continent, it would seem that they are not of good stamina, and are certainly not worth the trouble and risk of securing permits to bring over. Several

enthusiasts have imported them, but have seemed to meet with disappointment in the venture. One hears of yellow Masked, blues, greys—which are probably a dilute form of the blue—and even white birds, but definite information of their colour and ancestry is not available, and it is to be feared that the bar sinister would feature largely in their pedigrees. From the number of birds that have come over, one would reasonably expect some reports of results, but there remains nothing but an ominous silence.

Blue birds imported direct from California have been really excellent specimens of good size and colour and robust in health, but although they have wintered outdoors without heat here, they make no secret of their opinion of our summer, even the one we had in 1955 ; it is a good thing that none of them can talk. Although I am certain I have some true pairs, they are proving most reluctant breeders. Some will not go to nest at all, others will not sit when they do eventually lay eggs, and they are remarkably perceptive in taking care not to lay an egg when any other respectable Lovebird could be expected to foster it. They generally wait until it is so late that there would be very little likelihood of good quality young being fully reared. Possibly by continual perseverance a strain will evolve from split bred birds which will settle down in our climate, but the start is very slow in coming, and I know of some who have already given up the attempt.

Quite a few normal Masked are being bred, but it is only comparatively few. Occasionally one hears of a complete beginner meeting with considerable success. Usually they record their success with pride, and indicate how easy these birds are to manage and then, like the old soldier, they simply fade away. It is a pity that these people do not realize what a valuable asset they have in a proved breeding pair of Masked Lovebirds. If only someone had a stud of twenty proved breeding pairs we might begin to establish them. Anyway, let us hear no more about crossing blue Masked with Fischer's or other Lovebirds (or even Budgerigars) to establish new colours until we have really established a good strain of blue Masked. Any such suggestion is sheer waste of valuable material.

One species we managed to keep going in very small numbers right through the war years was the Peachfaced, but new blood was urgently needed. It was unfortunate, therefore, that such few birds were imported when the ban was not on, and the few that did arrive were mostly aviary-bred birds from South Africa, probably almost as inbred as our own. However, even this was new blood and definitely helped to improve our stock. The position, though, is far from satisfactory ; whereas Peach-faced used to rear as many as eight good young or more each season, the figure is much lower to-day, and among certain pairs plucking is prevalent and occasional signs of bone

weakness. Before good strains of these attractive birds can be expected, it will be necessary to import some more, preferably wild-caught specimens.

It would, of course, be most desirable to get other species of *Agapornis* established once more in our aviaries, notably the Black-cheeked, of which I believe there is only one specimen in the country to-day. Yet this was one of the most prolific and even-tempered of them all, moreover it was one that was supposed to be sexable by the colour of the iris. This definitely is not a sexual distinction in the Masked, as I have seen suggested, and I am not convinced that it is reliable with Black-cheeks and Nyasas, but believe it is. There are no Madagascar Lovebirds and very few Abyssinian, which again are very handsome birds, even if they are reluctant breeders. To talk of Red-faced Lovebirds when discussing establishing strains may be out of place, so perhaps it is best to leave it as an honourable mention.

Probably the greatest field of possibility in establishing strains is among the *Neophema*, and, if we accept Peters' list as correct, this still includes the Bourke Parrakeet. So far as England is concerned, three of the seven species can be eliminated at once, namely the Orange-bellied, the Rock Grass, and the Blue-wing. In passing these over, I would like to mention that the first named bird has always been known here since its discovery as the Orange-bellied. In Australia, however, the name has been varied to Orange-breasted, whether this is just to be awkward I do not know ; perhaps it is the fact that in the antipodes their inverted position has caused the bird's anatomy to slip, as the orange part of the bird is on its belly and not its breast. Surely it cannot be on grounds of delicacy that this name has been substituted. The Rock Grass is generally too lethargic in an aviary to breed, and although the Blue-wing was at one time quite plentiful and a delightful breeder, we just have not any of them here to-day.

The Bourke can fairly well be considered established, but they still require care to maintain. Breeding stocks have been kept going over the last twenty years without a break, and during the lifting of the ban a few sources of new blood were received most gratefully. I do not agree that these imported birds were superior to our own, *some* of them were, compared with *some* of ours, but some of the newcomers were definitely inferior to our best birds. Bourkes undoubtedly vary considerably, and when the systematists get down to them with their tri-nominal taxonomy they will have a lovely field splitting them into dozens of minutely varying sub-species. Meanwhile aviculturists are left to explain why some birds are much duller than others, why some are much brighter pink, others have brilliant blue frontal bands in the males, and so on. I am quite satisfied I have had at least three different sub-species in my time, size being one of the varying factors, and although I am not putting this forward as an excuse for under-

sized birds, I am making it clear that these differences do exist. Anyway, there are several sources from which absolutely first class Bourkes for breeding or exhibition can be procured, although I am not of the opinion personally that it is suitable for the latter purpose at all. So well established is it indeed that we are beginning to hear of colour mutations such as buff-backed and pink-backed birds, which I believe are not infrequently encountered in Australia, as well as white or albinos.

The Elegant, whilst not so numerous as the Bourke, is another species that has been kept going continuously, and has been rather more fortunate with regard to access of new blood. The demand for these birds at home, however, is not very great, whereas breeders abroad seem to appreciate their possibilities more fully, with the result that more and more of our slender resources are being exported annually instead of being retained to develop the race at home. If these should dwindle, it will only be due to sheer apathy on the part of the home market.

No such lack of interest exists with the last two species, the loveliest of them all, the Splendid and the Turquoise, but even here the demand from the foreign market is a real threat. Home buyers seem to adopt the rather smug attitude that they will wait until the price comes down, whereas abroad they are only too anxious to obtain supplies while they are still available, and are most likely to secure good quality stock before any deterioration sets in. No man can be blamed for selling in the best market, that is why this export trade is a real threat.

Returning to the Splendid, Mr. Holmes Watkins has been breeding these birds from imported stock for the last two or three years, and now has a definite strain with a number of breeding pairs. He has described them as ridiculously easy to breed. Well, they may be, to him, but why is it that having distributed quite a large number round the country others are not finding them so simple. There must be something in his methods that are not fully understood by others, or we should be hearing of more and more successes. Or do others just take chances that he does not, and so fail. I consider myself remarkably fortunate in having done well with them last year with birds which did not come from him; I hope I can repeat the performance this year, for I remember being very fortunate with Splendids before the war. In putting such a sentiment in writing I fear that I am almost courting disaster. Having reared twenty-two from three pairs, I am hoping that this year I shall be in a position to augment the numbers in other collections, but so far I am just trying to build up a substantial stock before dispersing them broadcast. This is an example illustrating what I have in mind when speaking of established strains of birds, and until there are a number

of breeders with such stocks of various species, I do not really consider the birds are firmly established. Facts show that once a species becomes scattered in single pairs in many collections they seem to dwindle, and that only by building up substantial studs under the care of one specialist are the chances of developing a substantial healthy stock at all encouraging.

Turquoisines are not quite as comfortably placed. Although a goodly number were reared last year at Keston and here, in both places there was, unusually enough, a surplus of hens. These may be most useful later on when hens become scarce, as is the general rule, but meanwhile it seriously retards the rate of progress. Nevertheless, a start has been made, and although I do not know of other successes, there may well be a few more left in the country. Again, the source of my supply was from Australia direct from Sir Edward Hallstrom. Whilst agreeing that these birds never were quite so easy to manage as very early aviculturists claimed, I have never found them so hopelessly prone to disease, accident, and other acts of God beyond our control as certain other well-known breeders have reported. Modern, or shall I say, post-war Turquoisines, have been less prolific than those of half a century or more ago, when they were reputed to rear three or even four broods of four to six young each. Two nests of three or four have been the usual number, although I have had three nests in one instance which were all reared in plenty of time to avoid anxiety about unfavourable weather before the last brood fledged. Provided nothing unforeseen happens, there is every hope that these birds will eventually become more readily obtainable.

It is hoped that these notes do not convey the impression that it is a next to impossible task to develop the resources we have at our disposal. Such is definitely not the case, but to attain this most desirable goal will require considerable effort, patience, and expense over a fairly prolonged period, and in undertaking the problem there are more obstacles to be overcome than a newcomer would at first appreciate.

In my opinion, success is most likely to be won by building up fair sized nuclei of various species concentrated in a few comparatively large studs, where as many as possible could be reared regularly before they are broadcast to individual small collections. Only by taking this long view can one really obtain any feeling of real security for future supplies. Neither does this profess to be a complete résumé of all efforts being made to accomplish the task, but only examples of a few with which I am in personal touch. It is pretty apparent that only by combined co-operation will the goal be achieved.

THE KEEPING OF SOFTBILLS

By HERBERT FOOKS (London, England)

In the November–December number, 1954, J. P. Newell asks for information on the keeping of softbills and you, the Editor, endorse the sentiments expressed.

Greatly daring (I waited for three issues for the experts to comply with this request) I now thrust out my neck in the hope that any falling axes will fall as lightly as possible.

I take it that Mr. Newell refers to softbills which have already been caged and are already taking their food readily, as the treatment for these and freshly caged birds is different. I can never make out why the oriental standby, the basic food for softbills in the East, in other words "sattoo" or powdered gram, is not used in this country. It is the easiest food in the world to prepare, and has a very high protein content. I have kept Shamas on this, with certain other titbits, for twelve years and more. However, as gram seems to be unobtainable here, there is little purpose in enlarging on the subject. The first thing to do on acquiring a bird is, I would suggest, to clean it. Start with the feet and claws, then dust or spray it with any well-known insecticide—a good home-made one is one part of sodium borate and two parts pyrethrum powder—and the next day see if it will take a bath on its own, otherwise bathe it gently in warm water. A normally healthy bird will almost always bathe of its own accord. A leafy branch dipped in water is the best way to give new birds a bath.

If we take the commonly imported Shama as a standard for feeding other softbills we should be fairly near the mark for most of the other common species. The principle to apply is, the more restless and active the bird the more nourishing its food should be. Shamas are, as a whole, fairly sedentary, and also very greedy and wasteful, picking out any food which gets in the way of some chosen morsel (sattoo avoids this, as it is fed in the shape of a doughy ball and titbits are served separately). There are several proprietary brands of insectivorous food on the market on which birds will do well, but their pockets have to be well lined if more than half-a-dozen softbills are kept. It is, however, not difficult though rather laborious to make your own mixture. To offset the labour is the fact that the resulting mixture is very much cheaper than any ready-made food you can buy. The basis of the home-made is fish-meal, meat-meal, and biscuit-meal, which should be coarse and not fine. It is difficult to give exact proportions, as the results are judged by look and feel. However, one part each of fish and meat and two parts of biscuit well mixed

together will make a start. To this is added hot fat until the whole just adheres together, but is crumbly when taken in hand. This can be tinned or placed in glass jars and kept in the cool.

For daily use the following should be added. Hard-boiled eggs dry the mixture, and grated carrot to moisten it. It is again difficult to give the proportions, but when picked up and allowed to roll on the fingers it should crumble, but not too fast. Most softbills will appreciate a drop or two of liquid honey well stirred in, particularly in the case of Fruitsuckers. Mealworms should be given very sparingly and this applies to maggots or gentles as well. Bluebottles (home-bred), blackbeetles, moths, butterflies, spiders, and any other insects that they can handle are all beneficial, particularly those with hard wing cases as most, if not all, insectivorous birds need roughage. Clean water for both bathing and drinking are essential—no bird will bathe in dirty water, although it will readily drink it.

It need hardly be stated that the larger the cage the better, and if several perches are used then have them all of different thickness. Most caged birds have standard perches which allow no alteration in grip from one year's end to another.

Starlings and Mynahs may be called omnivorous, and it is as well not to overdo the proteins as they are very inclined to fatty degeneration. The Grackles or talking Mynahs are very prone to this, and should be given plenty of soft fruit to fill the cavities. Being a hearty feeder the Mynah is in consequence a messy bird, and by far the best cage to keep them in is one with a double bottom; the top one made of wire netting.

Most avian ailments are due to insanitary conditions, often because birds will decant their food into their own droppings, and then pick them up from the floor. The obvious way to avoid this is by a wire floor some few inches off the tray, yet cages of this type are neither advocated nor obtainable in any shop I have come across. In the East this is the only cage obtainable, and as the Oriental is probably the best aviculturist in the world, he should know.

I would suggest that when a foreign softbill has been newly bought from a fresh importation, the food offered should be in small quantities, say three times a day. It is also advisable to continue with the same food fed by the seller, and any change should be made gradually.

It is well known that red and green pigmentation in birds fades after cage moulting, and is nearly always the case with such birds as Tanagers, Cissas, Chloropsis, and Minivets, as well as others. The chestnut of a Shama's breast will also fade and after several years will be noticeably different to that of a wild bird. Sometimes, however, this colour change can be arrested by including in their diet a pinch of soya bean flour. If the beans are obtainable whole, so much the better. They should be boiled for 15 to 20 minutes, dried off, and

en crushed. As this bean has a very high protein content, it should be fed only in small quantities.

The Fruitsucker or Leafbird will eat more soft fruit such as grapes, ripe banana, and orange than insect mixture. They are also very fond of any humming-bird mixture fed in a container which is commonly used for these birds. I personally have kept them for many years on fruit, sattoo, and Horlicks given liquid. A lady friend of mine had one for over fifteen years in Scotland, where it was allowed to fly at liberty in the garden.

My own Shamas in England are given raw, minced herring or sprats mixed with biscuit and hard-boiled egg as a change from their regular food.

In India I have seen these birds actually catching small fish in the eddies of a woodland stream. They treated them the same way as a thrush treats a snail; by banging them against a stone until they were soft and ready to be broken up.

There are many Shamas in England which I consider are being overfed. They sit on their perches wheezing like aldermen, and I cannot help feeling that by allowing them to over-indulge their span of life must be shortened.

Most softbills are easier to tame than hardbills, and when feeding maggots or mealworms these should, when the bird is a new arrival, be thrown on the cage floor with the owner standing by. After a week or so the hand should be left near the bars of the cage until the bird gains enough confidence to pick up the food. When this has been accomplished with some regularity, retain the insect between the fingers until it is taken from the hand.

I personally keep my mealworms in a tin, and when I flick the lid with my nail, the birds immediately come to the bars and crane their necks in an effort to see which one will be served first.

* * *

A FLOCK FRUIT PIGEON AND SOME TANAGERS

By Dr. R. E. B. BROWN (Newcastle, N.S.W., Australia)

I have at present a Flock Fruit Pigeon (*Lopholaimus antarcticus*). This bird is not excessively rare in the wild state—there being still some flocks frequenting the Rain Forests, but it is extremely rare in captivity here. I can only find two records of single individuals being kept in captivity—one specimen at Taronga Park Zoo and one by a man at Lismore (N.S.W.) ; the reason for this being that they are extremely hard to catch, only feeding in very high trees and never seeming to visit the same tree twice.

My bird was brought to me wounded ; it had been shot through the right wing and also had a wound in its rump. When I saw it I didn't think there was much chance of saving it ; also, it wouldn't eat anything. I forcibly fed it on chopped banana and pear—I had to keep this up for six weeks and two days. Then it began to eat the berry called " Lilli Pilli "—but it would only eat the berries while they were on the branch. It didn't recognize them as food when taken off the branch. In another week it began to eat chopped banana if held in the hand. Now it eats any chopped fruit freely and also " softbill " mixture. Its wounds didn't seem to worry it at all—it has now quite recovered from them. These birds must be very hardy to survive such hardship.

Have these birds ever been kept and bred in England or elsewhere? I am now very keen to get a mate for my bird, although it is in immature plumage, and I don't know which sex it is.

Since the end of the war the importation of all birds into Australia has been absolutely banned, so that the only foreign birds we are ever likely to get are those bred here. When the ban was imposed I had three red Tanagers, a pair of Scarlets, and a hen Maroon. I thought I would try and breed a domesticated race. I have now bred them to seven generations and have thirty-five from my original three. I first mated the Scarlets together and then mated a young Scarlet cock to the Maroon. Maroons are definitely dominant over Scarlets, and although my Maroons all have Scarlet blood, they look like pure Maroons and to all intents and purposes *are* pure Maroons. Anyhow, although I dislike hybrids, I couldn't do anything else, as mine were the only ones in Australia. The hybrids are fully fertile—in fact more so than the Scarlet. Now I have three types—pure Scarlet, obvious hybrid, and Maroon with a dash of Scarlet blood. The hybrids are very beautiful birds. I still have the original Maroon hen ; she is still breeding and I got her in 1937.

Of course I know that these birds are not rare and no doubt have been bred many times in Europe, but situated as we are here now, an effort should be made to breed a domestic race of any foreign bird that is available. I am trying to do the same with some success with Black Tanagers and African Glossy Starlings. I failed with Blue Tanagers as I only bred cocks and lost the only hen after a time, and with Western Blue Birds. The latter I found easy to breed as they feed the young on white ants. But the hens all got a condition like the French Mould of Budgerigars and I gradually lost them. The cock Blue Birds didn't get it, only the hens. I have no idea what caused this condition. Perhaps someone could enlighten me.

LANDSCAPED PHEASANTRY IN ST. LOUIS ZOO

By WILLIAM CONWAY, Curator of Birds (St. Louis, Mo., U.S.A.)

In August, 1954, a long-awaited pheasantry was officially opened at the St. Louis Zoo. Then, nearly a year later, we had time to evaluate certain methods used in this display. Numerous inquiries from other collections testify to the interest in our solution to the old problem of displaying pheasants like the beautiful and exotic birds they are, rather than as varied-hued domestic chickens.

In the July I was presented, as bird curator, with the problem of making an attractive display in the seventeen enclosures of the new construction. The structure of the pheasantry is conventional; all pens have dirt floors and all are backed with shelters. Seven shelters may be heated in winter. Because of the well-known digging, scratching, and trampling tendencies of pheasants, all public pheasantries in the United States with which the author is familiar are rather simply built, with the display yards almost, or entirely, devoid of any vestige of plant life or landscaping. The idea of a landscaped pheasantry is not a new one, but certainly sadly neglected. Many of our most prominent aviculturists, and Jean Delacour in particular, steadfastly recommend planting and more naturalistic runways. With the encouragement of our friend Jean Delacour and backing of Director George Vierheller, we resolved to attempt a landscaped pheasantry.

We discovered that "flat", "bare", "plantless", and "mechanical" were all adjectives which might well be applied to an unattractive pheasant yard. Visitors might never guess, from a yard described in this description, that stones, logs, or even plants existed in the world of pheasants. After careful investigation, we decided that no yard should be flat, that a natural and pleasing use of log and stone was indispensable, and that all yards should be planted as profusely as satisfactory display permitted; furthermore, some suggestion of the tropical or temperate nature of a pheasant's habitat should be attempted.

July is scarcely the best month for planting and landscaping in this latitude, but our small crew doggedly seeded, transplanted, and toured through the record 112° F. heat of that summer. Pens with heated shelters were prepared for such comparatively delicate tropical forms as Peacock Pheasants, Firebacks, Argus, Ocellated Turkeys, etc. These pens were planted with a species of dwarf bamboo, hardy here, and pampas grass. Stump and log perches were draped with Spanish moss. Pens with unheated shelters, intended for the hardier forms, were planted with various combinations of: pfitzer juniper, spiny creek juniper, Andorra creeping juniper, Japgarden juniper, mugho

Swiss mountain pine, and pyramidal arborvitæ, as well as pampas grass in some cases. Under our conditions, pampas grass has proved successful with all but the most destructive forms. Like most grasses it is most palatable in the spring growing period and must be protected from some species at this time. Our runs lie over a "rip-rap" limestone bed. This rules out azaleas and rhododendrons with their acid soil requirements, which might have made a nice Tragopan habitat background. Mugho pine, however, adds a very natural appearance to the Tragopan run.

Ground cover always presents a problem. Perennial rye grass was chosen as a quick grower of relatively low palatability. All runs were started from seed. This grass has proven successful, despite its late start, in twelve of the seventeen runs, including the following: Siamese Fireback, Vieillot's Fireback, Argus, Germain's Peacock Pheasant, Palawan Peacock Pheasant, Swinhoe, Edwards's, Satyr Tragopan, Himalayan Monal, Ocellated Turkey, and Green Peafowl. unsuccessful with Reeves's, Lady Amherst's, Golden, Silver, and Blue Eared Manchurians. Short of pegging wire down, the Eared Pheasants have, thus far, kept a very substantial lead over attempts to maintain grass on their runs. However, we have been able to maintain a fair stand in the Impeyan runs. As the Monals cultivate the soil, we sow seed and find it, rather amusingly, a successful division of labour.

The use and placement of logs and stones in cage decoration brings a subjective factor into cage design. In display composition it is often difficult, indeed, to analyse why an exhibit looks so much better with such and such a stump here and a very certain stone there. A change in face or position in one of these display props may make all the difference between an eye-catching scene and one that is vaguely disturbing or unnatural. A decayed, fallen log or large stone should not, of course, teeter lightly on top of the soil as though it were ready to fly away at the least breeze. Logs and stones are a part of the soil and should appear to grow from it. Widely different rock types look unnatural together and freshly quarried rocks are taboo. We have used worn, weathered limestone. Beautifully gnarled and twisted cedar (*Juniperus rubra*) comprises most of our perching space and "natural" wood features. Cedar weathers well and resists the inroads of insects.

Another feature, which we insisted upon in each display, was a pool. Yes, we know that a pool is not a necessary part of pheasant culture; neither is an attractive pheasantry. A pool in a pheasant display is, and should be, nothing more or less than an artistic tool whose shape and position complete a focal point for the yard composition. Under no circumstances should a pool be round, or square, or some other man-made geometric figure. A pool must have the



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OCELLATED TURKEY DISPLAY.



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A SIMPLE UNIT FOR SATYR TRAGOPANS. MUGHO PINE USED TO
INDICATE HABITAT.

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appearance of a plastic, free form, as it does in nature. A limestone at area, several inches deep and wide and covered with sand, may surround several banks of the pool to avoid any objectionable damp places which might develop. The pool should be fitted with an overflow and allowed to overflow slightly at all times.

Speaking last of that which must come first in actual construction, return to grading and contouring the soil of the run. This conception apparently quite new in run design. While some collections have been able to take advantage of natural slopes and dips, planned contouring from an æsthetic as well as drainage viewpoint seems to have been mostly overlooked in pheasantries. Contoured ground, more than any other factor, lifts the pheantry from the barnyard class to a display of exotic beauties. Each exhibit of the pheantry grounds, in this way, by itself; a small, but attractive, little world inhabited by a foreign gem shown off to the best advantage by its setting. This very important feature of the new pheantry usually consists of nothing more than a gently sloped dip which winds down through the centre of the yard in gradual curves. Rocks are set along the edges of the dip, forming small ridges, and roots from weathered stumps may project into it. The "dip" acts very practically to drain excess rain to a surface drain at the rear of each run and allows us to water the display yards.

Needless to say, there are many additional plants and experiments we are trying and hope to try in the future. Our bamboo withstood 3° F. below zero and, while our climate makes it impossible to construct actual native plant backgrounds for our pheasants, we have been able to give some suggestion of the species appearance in a state of nature.

It is lovely, indeed, to stand on the perimeter of a small jungle scene where a Peacock Pheasant may suddenly emerge from lacy bamboo and display in a small clearing to his lady love, while Crowned Geese in the foreground continue their incessant preening; to watch a giant Argus flutter down from a gnarled stump to drink at a crystal pond; or to see an Ocellated Turkey strutting in a clearing with bamboo backdrops and Spanish moss curtains. These are scenes our visitors carry away. Perhaps the best testimonials for the landscaped pheantry have come from the many visitors who have paused to amine and enjoy the yards, even when the birds are confined to alters.

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BREEDING NOTES ON BROWN'S ROSELLA

By DAVID M. WEST (Montebello, California, U.S.A.)

Despite the deserved popularity of the Rosellas as avicultural subjects, only a few of the members of this group have been very common here in California. The only plentiful members are the Blue Rosella and the Red Rosella and the Pennant—and they are not seen too frequently. The Stanley and the Brown's have always been on the scarce list and have always been practically unobtainable. Adelaide, Yellow, and Green Rosellas have been almost unknown and I do not recall ever having seen a pure Green Rosella. But, to get back to the topic, I should add that the first really successful importation of Brown's Rosella for avicultural purposes would appear to be the pairs obtained from the Keston Foreign Bird Farm in the early 1930's. These birds were sent to the late I. D. Putnam, of San Diego, and they bred for him on many occasions.

Mr. Putnam once told me that the Brown's usually nested during January in the mild climate of San Diego. This did not worry him because many Australian birds began nesting in January. Brown's generally do not change their nesting habits and continue to nest during the correct Australian season, regardless of the fact that they may be north of the Equator. Luckily for Californians, this is not the drawback it would be to aviculturists living in colder regions.

Unfortunately, the species does not appear to be as prolific as its Red or Blue cousins, and Brown's became increasingly scarce in California and eventually all but disappeared. Their rarity was helped along by the male's rather unhappy habit of indulging in considerable amounts of wife-beating during the breeding season. As always seems to be the case with rarities, the few Brown's left began to become increasingly vague about the correct procedure to follow in raising a family, and finally, by the late 1940's, there were only two or three good specimens left in private California collections and even the zoos were in very short supply.

Having read of the beautiful hybrids to be obtained from a Brown's \times Red Rosella cross, when a chance came to trade some very noisy Chocolate-throated Conures for some extra Brown's cocks the exchange was quickly made.

The birds arrived in fine condition and really were as lovely as this species can be. Incidentally, one should add that not all aviculturists and naturalists are in agreement as regards the beauty of this species. The Australians sometimes refer to it as the "Smutty" Rosella and this rather unattractive name implies the opinion of some on the beauty of this species. I believe the late Duke of Bedford considered it one of the loveliest of all the *platycerci*, and many others are equally enthusiastic over the beauty of the Brown's.

The birds were friendly for two cocks—and it was many months before it was discovered that one cock fed the other "cock". As in some of the Asiatic parrakeets the cocks feed each other and I have also seen this among other Rosellas, I still did not tumble to the fact that the two birds were a pair and not two males as had been originally supposed.

During the 1953 season it became apparent from their actions that they were a true pair and were anxious to breed. Great interest was shown in the nest, but nothing eventuated, probably due to the late date the nest was introduced. During the year the male began to pick himself and he has continued to pick the feathers on his breast ever since. Thinking that mites might be the cause, the bird was caught and dusted with powder several times, but with no apparent results. He seemed to enjoy bathing, so a fine spray was turned on each day and, though this opportunity was utilized almost every day, no improvement in condition followed. Finally, it was decided that sunflower might be the cause and so this seed was gradually withdrawn, and still there was no improvement. All hemp and other seeding seeds and foods were completely eliminated from the diet for several months, but again without apparent result.

During the summer of 1953 it was felt that a change of scene might be beneficial and the pair were transferred into a new aviary, 19 feet long, 3 feet wide, and 8 feet tall. They seemed happy in the new home and the cock indulged in considerably less wife-chasing than in the former smaller home.

As Brown's are so notorious about desiring always to be in a family way at every season other than the right one, it was decided that a nest-box could be hung during January and take a chance that the weather would not be too severe. Actually, many Australians, such as Bourke's and Elegants, will start nesting operations during this month and, as some of the Asiatics, such as Ring-necks and Plum-heads, also start this early, it was felt that this was not too serious a risk to take. Two boxes seemed adequate; one was about 4 feet high and a foot wide and a foot deep, while the other was smaller and about a foot high, wide, and deep. Both boxes were hung under the shelter. The nests were filled with damp wood shavings and had been thoroughly cleaned prior to being hung.

I had guessed that the larger box would be the one favoured for the enterprise, but I was very much mistaken. From the very first the smaller box was very much favoured and only two or three visits to the larger box were made. It is interesting that the smaller nest was instantly picked as the desired one. I had no sooner put the boxes up than the male began investigating them. The male would fly to the entrance and cautiously put his head inside and then call

excitedly to the female. She would sit near the box and, after a short period, would fly to the entrance hole and also investigate.

During late February the pair were seen to mate and the female began to stay in the box during the day. After about a week the female began to sit at night also. After incubation actually started the hen sat very tightly and was seen so seldom that it was sometimes wondered if she were still alive. When a little *poa annua* was put in the male would usually make a few soft calls and very shortly after the female would then come out to eat. Sometimes, however, she would not respond to his calls and would not be seen for four or five days at a time.

Twenty-one days were allowed for incubation. An additional seven were allowed before the nest-box was inspected when the hen was found off one day. The nest contained one chick several days old and three eggs, two of which were clear and the other fertile, but which eventually failed to hatch.

Realizing they had only one chick to feed, it was then understood why the male had not been seen cracking seed too frequently or ever show signs of impatience or excitement when the greens were being brought. The one item that really filled him with activity would be the handfuls of *poa annua* that would be given in the morning and again in the evening. This he would immediately attack and spend long periods of time going over all of it to be sure that all the small seeds were eaten. This small grass is a universal favourite among all the birds in the collection and, for this reason, must be rationed so that all may have their share.

During this period the male would consume large amounts of hemp in preference to other seeds. Only on rare occasions would he go to the entrance of the nest and call the hen to come out to eat. Generally, he flew to the top of the nest and there would call to the hen, who would then appear in the entrance, survey the situation, and then leave the nest. If anyone were present in the yard, she would immediately return to the nest and wait until no one was about—despite the fact that she is a very tame bird.

During the entire period the youngster was in the box I never heard any sounds coming from the nest. Usually young birds being fed are plainly audible, but not the young Brown's.

The most interesting thing, and also the oddest when one compares it with the other members of the Rosella family, is the fact that the female Brown's brooded the chick constantly until about the twenty-first day. Usually a female Rosella will quit brooding at night after about the tenth day, and sometimes this is productive of fatal results if the nights are cool. I am quite sure that if the Brown's had quit brooding the solitary chick would have died as the nights were still very cool. I could not help but wonder if she instinctively realized

that this was the case? That she continued all during the first three weeks to brood during the entire day is another very interesting point. Usually the average Rosella will leave the nest for considerable periods of time during the day after about the tenth day.

After the twenty-first day the hen no longer returned to the nest at night. This is always a worrisome time to me as I have found that if the nest is going to be deserted or fed poorly it is along about the start of the fourth week that this will occur. However, all went smoothly, and the daily amounts of *poa annua* were eagerly consumed, so I could only conclude that all was well with the youngster, even though I did not see the hen going to the box.

On the morning of the thirty-first day I noticed the young Brown's perched on a twig. Walking closer to the bird I was very much surprised to find that it remained quite steady and absolutely calm. Perfectly feathered, the bird most closely resembled a paler version of his mother. I was especially pleased to note the good size of the bird—quite superior to either parent. What a pleasure it was to see the bird fly. Instead of crashing into all available objects and then dropping to the floor panting and exhausted, the bird flew perfectly and steadily. Generally young Broadtails are nervous and very unsteady for the first few weeks, but not the young Brown's. One could only gasp in amazement at the slow flight and the perfect landings.

During the next few weeks the bird began to learn to pick up seed. After the first few days the mother no longer paid much attention to her offspring, and the father took over the complete care of the youngster. The father continued to feed the bird long after this was necessary, and this fact would lead one to guess that the sex of the youngster might well be a female.

When the youngster was about five weeks old the parents were seen to re-mate. Feeling that their attitude toward the youngster might change if a new family were contemplated, the youngster was removed to another aviary. However, the parents shortly after this fell into a heavy moult and the second nest never eventuated.

It should be added that this breeding took place during the 1954 season, but that, until now, there just did not seem to be any time to put these notes down on paper.

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PARROTS IN THE HALLSTROM COLLECTION AND THE TARONGA PARK ZOO

By Sir EDWARD HALLSTROM (Sydney, N.S.W., Australia)

My aviaries have continued to produce a large number of African Lovebirds of the four species—Fischer's, Masked, Black-cheeked, and the Peach-faced. Several hundred have been reared. Of the Scarlet-chested Parrakeets there were fifteen, and several Black Cockatoos. The pair of Glossy Blacks did not go to nest this year. Their youngster is now a magnificent male, in perfect health. Over forty lutino Indian Ring-necks have been produced for the year.

At Taronga Park I carried out an experiment by putting together all the Quaker Parrots we had in one large cage with ample facilities for them to be able to nest, and provided them with plenty of small sticks and brambles. It is impossible now to tell how many we really have. The number was about fifteen. I have counted over fifty on the ground, but know there were large numbers still in the nests. In this way this interesting bird has made a very nice display.

Eclectus Parrots at Taronga Park were treated in exactly the same manner, about fourteen pairs being put in a large aviary facing the sun, with ample protection from our cold southerly and westerly winds. At the moment there are a number of babies. In my personal collection the pairs have been kept in separate enclosures; a number of youngsters have been produced each year. There are some in the nest at the moment. Where colony breeding is undertaken for this purpose, great care must be taken immediately the birds leave the nest. The parents seem to lose contact with them, and fail to feed them on many occasions. These birds are taken to the Bird House, and in a few days are feeding on fruit such as banana, apple, and paw paw, boiled maize and sunflower seed being offered as they mature.

When rearing in separate aviaries the parents almost invariably complete the feeding and rearing of the youngsters after they have left the nest. There are some advantages and disadvantages in both methods of breeding. In the single aviaries often birds will not accept the mate that has been given them. One magnificent bird that talks quite well has, over five years, not accepted any mate. There are four or five others in the same position. I am at the moment building an aviary which will enable me to put these birds together. I hope that this method will give them a new outlook with regard to the opposite sex.

The breeding of the Eclectus Parrot is a very simple affair. All that is needed is proper accommodation, a suitable mate, plenty of fruit, sunflower seed, and an abundance of boiled maize. My experience has shown that where the aviaries are fairly narrow, say up to 5 feet

wide, with a considerable length of 20 feet, birds will rarely go to the floor, remaining on the perches and in the nest-boxes most of the time. Where the birds are in a colony, and the floor space has been enlarged to something like 30 feet by 30 feet, they do go to the floor, pick up some sharp grit, pieces of fruit that may have fallen to the ground, whereas in a narrow aviary, anything that falls to the ground is lost. The method, therefore, for a narrow aviary is that the food must be shredded so that the mouthful that the bird picks up is eaten, whereas in the colony cage, fruit of a larger size may be fed in trays. The trays used are about 2 ft. 6 in. long by 18 inches and 2 inches deep. In the smaller aviaries the food container with their shredded food slides in through the wire at the front.

At the time of writing there are two African Grey Parrots just feathering. The parents are a nice tame pair of birds and are doing quite a good job in rearing these youngsters. They are fed with shredded fruit, apples, bananas, and paw paw, boiled maize, and sunflower seed. Great care is always taken to see that no food is left overnight in their aviary, as mildew and contamination during our warm and humid weather may be fatal to the youngsters.

My Red-bellied Conures at the moment have three lovely babies. The Musschenbroek's Lorikeets have two babies. These birds, of which a number have been reared, present a very serious problem in the aviary. They rush into their nest-boxes, although they may be placed as far as 25 feet from the front of the aviary, sometimes with fatal results to the youngsters. It is very disappointing to take a dead youngster from the aviary, with a crop full of food, well knowing that the parents' habit of rushing to hide themselves has been responsible for the loss. I have long since discouraged visitors during the breeding season.

During the season 1954-55, I reared only two Macaws. They were Blue and Yellow, and abandoned their youngsters just about the time they should leave the nest. It was noticed that the parents did not take their lettuce, boiled maize, or their fruit, and began to confine themselves to sunflower seed. This was a clear indication the youngsters were not being properly fed and examination revealed that the youngsters had nothing in their crops. They were taken immediately from the parents, and were successfully hand-reared. It is far from easy to hand-rear Macaws at that stage, as they are strong enough to resist, refuse to accept any food fed to them by spoon, and put up such a struggle that it is not an easy task, whereas, of course, if the birds were taken when younger they readily accept their food. These two youngsters were finally reared with the aid of a syringe, having 30 c.c.s of food at each feeding. Examining the nest a few days ago, I found two more half-reared Blue and Yellow Macaws. The time required for the hatching of the Blue and Yellow

Macaw is similar to the Red and Yellow, twenty-five days. This has been carefully tested in the nest and in the incubator.

I am wondering if any of the members of the Avicultural Society have seen a Golden-shouldered Parrakeet. I had never seen one until three years ago, when I procured two males. Having no females, I gave them Hoodeds. They were friendly immediately, and soon went to nest, producing between them some sixteen youngsters. Some males are in Taronga Park. I kept three pairs for myself. They are the prettiest of all the birds I have, much prettier than either of the parents; breast and neck are a beautiful turquoise colour, the wing patches are much larger than in the Golden-shouldered, and slightly smaller than the Hooded. It is always thrilling to look at the rare beauty of these three pairs of birds. They are now old enough to go to nest in the forthcoming season, due in April-May. I am wondering, and I should soon know, whether these birds are closely enough related to be fertile.

I now have four pairs of pure Golden-shouldered Parrakeets. These are fully-matured youngsters, from which I am hoping for a bumper crop of babies. They lay five or six eggs. I am sure my collection of pure Golden-shouldered are the only ones in captivity; I have altogether seventeen. I am not prepared to part with any of these birds, preferring to breed from them myself, and then distributing them amongst aviculturists who would appreciate these rare things. Provided I handle them carefully and jealously I am sure I will be able to reintroduce this bird to aviculturists both in England and Australia.

This past season I gave the two male birds very brightly-coloured Many-coloured females. Both males fretted, and would have nothing at all to do with the Many-coloured hens. I persisted long enough to have lost this past season's breeding. I again gave them Hooded females. The birds were once more happy and perky, displaying to the females, and they now show every indication that they, too, will take up housekeeping very soon.

* * *

BREEDING OF THE ROSE-BREASTED FINCH (*Carpodacus erythrinus*) IN CAPTIVITY

By GERALD DE PASS (Satwell, Oxon, England).

In the summer of 1955 I was successful in breeding the Rose-breasted Finch. I have had these birds two or three years, but this is the first season they have nested. The nest was built late in the season

(about the middle of August) in an outside flight in a box tree, one of several against a wall at the end of the flight. The nest appears to be not unlike that of a Bullfinch, but I am afraid I never saw the eggs and did not find the nest till after the young had hatched. When cutting the brambles I thought I saw two young birds, but was not certain ; later I found one young bird dead. About fourteen days afterwards I was in the flight and saw the second one flying about.

My birds always had the usual foreign bird mixture consisting of millets and canary seed and I managed to get a few mealworms, and also gave them some pre-war paddy rice which the parents seemed to like as they took quite a lot of it. I also gave green stuff such as groundsel and chickweed, but was too busy to watch the feeding of the young birds.

I understand this species has not been bred in England before.

* * *

OBITUARY

FRANCIS H. RUDKIN (1861-1956)

If Francis H. Rudkin could have had a premonition about 8th April, 1956, he would have looked forward to that date with great happiness, for to him it would have meant a reunion with his beloved wife (" Little Mother ", as he always spoke of her to me), who had " passed on " some few years previously.

They had had a very long and happily married life together and when he spoke of her it was as of someone who had left earlier than he on a long and distant journey and that when he had finished what he was doing he too would set out and join her. He will now lie by her side at Bardsdale, in one of the world's most moving and beautiful burial grounds (not far from the delightful little township of Fillmore, in California), a few acres of deep green lawns with small, unobtrusive headstones, planted with beautiful shrubs and tall, graceful palms, for ever whispering in the breezes that always blow up the valleys. The whole is surrounded and enclosed by tall green hills over which seems fondly to brood the peace of the Ages. A fitting resting place for a kind and gentle soul who brought the graciousness and courtly manners of a bygone age into the present one.

Born in the English " Shires " and emigrating to California with his family when he was over fifty he still retained his English accent and one felt about him the quiet, unhurried life of an English village of a hundred years ago. That was perhaps why he was so successful with birds. He extended to them that gentle and quiet patience they respond

to. He had a "presence" and kinship with living things they all recognized.

Francis H. Rudkin truly loved birds; any sick or ailing feathered creature he treated like a parent treats a sick child. I have never seen anyone so kind and tender with a bird as he. Whenever he looked at one his whole face lit up.

We had many pleasant little excursions together during my last trip to California in 1950-51 and they will always be one of the happiest memories of that beautiful and friendly country. He was over 90 then and we always joked about my coming to see him for his 100th birthday but, alas, that was never to be. All arrangements were made for a trip there in 1955, but owing to illness they had to be cancelled.

Mr. Rudkin's death marks well over a century of aviculture in the Rudkin family for his father before him, in the first half of the nineteenth century, was a well-known breeder of British birds, canaries, foreign birds, and especially hybrids.

Between them Mr. Rudkin and his son, Harold F. Rudkin, had a vast assemblage of aviaries and flights, over 150 in all, which contained what must have been one of the world's finest collections of parrot-like birds, these included a great many rare species which will be mentioned in a later article.

Aviculture in America owes a great debt to Francis H. Rudkin for his unremitting care and patience in breeding and keeping pure at least five species of Lovebirds, of which he bred and distributed vast numbers. He also established the blue Masked Lovebird, which is now as common in the U.S.A. as the green variety. In addition, he maintained five varieties of Peafowl, though one was really a hybrid (the Spalding's), originated by the late Mrs. Spalding and the progeny of the Javan Green and the Black-winged, a huge and magnificent bird with a lot of bright yellow skin about the face. Mr. Rudkin was especially proud of his flock of white Peafowl, which lived around the homestead as tame as domestic fowls. Besides the Peafowl there were also many species of rare pheasants.

He had a wonderful aptitude for life and even at 90 could be seen on a ladder mending the top of an aviary or out-building and, with the aid of someone for an hour or two a day, he looked after his huge collection of birds himself. Of great independence of spirit, he lived alone except for the daily visit of a friend who cleaned up and prepared a midday meal. However, a short time before his death he went to stay with his son Harold. Even then he was still active—I received a letter from him only two weeks before he passed away.

He once confided to me that on occasions when any of his birds escaped or wandered away and were shot by thoughtless neighbours "in the mistake for hawks" (it's amazing how colour-blind bird shooters usually are) he always asked that the name of the killers should

not be divulged, as he never liked to bear a grudge towards anyone and that he could not have helped feeling bitter towards the slayers of his feathered friends.

It was a great happiness to Francis Rudkin to think that his son Harold was carrying on with the family's avicultural tradition and that at his death his collection would not be dispersed.

I am afraid that we shall never see his like again, for he belonged to a bygone age which will never return, when life was lived at a more even tempo and humans found their happiness in simpler and more substantial things than now and when integrity and morals had a more significant meaning.

All those who met Francis Rudkin were at once impressed by his gentle charm and inherent kindness and one felt all the better for making contact with such an outstanding personality.

SYDNEY PORTER.

* * *

LONDON ZOO NOTES

By J. J. YEALLAND

A young pair of Chiriqui Ground Doves (*Oreopeleia chiriquensis*), new to the collection, were received in exchange, together with some Gouldian, Long-tailed, Parson, and Cherry Finches from Monsieur Delacour, who bred them in California during 1955.

Another species never before exhibited here is the Pied Jacobin Humming Bird (*Melanotrochilus fuscus*), purchased together with some Red-throated, White-throated, and Blue-chinned Sapphires, Waterton's Wood Nymph, Ruby and Topaz, and White-bellied Emerald.

A tame young African Woolly-necked Stork (*Dissoura episcopus microscelis*) and a nestling owl (probably the West African Wood Owl) were presented by Mr. Alan Longhurst and brought from Sierra Leone by Mr. Robert Jackson.

A Mikado Pheasant was presented by the Parc Zoologique de Clères and a Common Teal by Sir Clive Milnes Coates.

The pair of Cereopsis Geese presented during 1954 by the Zoological Board of Victoria nested again and hatched three goslings early in March. One of these died at an early age; the other two are now nearly half-grown. The aviary of "homing" Budgerigars has been re-opened, but most of the present flock appear to be of a stay-at-home strain and only a few regularly come out.

Quaker Parrakeets, Great and Spotted Eagle-Owls, Gannets, various waterfowl and pheasants and, in the Bird House, a Larger Pied Wagtail, are nesting.

A pair of Satin Bower-birds have been put into the large Waders' Aviary in the hope of some breeding success. The male, a fully coloured bird deposited by Dr. Marshall, soon made a bower of twigs and decorated it with pieces of blue cloth, peanut shells, dead leaves, and brown feathers. He displays to a young bird still in the green plumage (one of those presented by Taronga Park in 1954), but in case this is actually an immature male, an older bird (a certain female) has also been put in. As is usual, the bower is orientated approximately north and south—this is actually almost north-west-south-east—and the male has been supplied with some charcoal with which to "paint" the twigs. This is done by breaking the charcoal into powder in the beak, mixing it with saliva, and applying the "paint" thus produced to the twigs with a wad of bark or piece of twig. Fruit pulp as well as charcoal is used in the wild state by Satin Bower-birds. Blue objects are the most sought after by them for bower decoration; brown, yellow, and grey ones are also collected, but not red or white. This species builds a simple avenue of twigs but, of course, some of the others, such as the "Gardeners", make much more elaborate structures, including a lawn of moss in the front of the bower, using as decoration flowers and fruits which are replaced as they fade or lose their colour, beetles' wing cases, feathers, and so on, provided that they are of a colour or lustre to the taste of the individual species. The nest of the Satin Bower-bird might be some distance off, the female only being occupied with it and the care of the young while the male continues to maintain the bower until the young leave the nest, when he joins the family and goes off with them.

Little is known about the Bower-birds of New Guinea. Dr. Marshall's recent work *The Bower-birds, Their Displays and Breeding Cycles* is the result of his studies over the past twenty years, yet he claims for it no more than a "preliminary statement" on what has been described as one of the strangest and least understood phenomena in nature.

* * *

BRITISH AVICULTURISTS' CLUB

The fifty-second meeting of the Club was held at the Rembrandt Hotel, Thurloe Place, South Kensington, S.W. 7, on Wednesday, 9th May, 1956, following a dinner at 7 p.m.

Chairman : Miss P. Barclay-Smith.

Members of the Club : Hylton Blythe, Miss K. Bonner, Mrs. V. M. Bourne, Captain A. A. Clarence, W. D. Cummings, A. H. D'Aeth, Mrs. I. Darnton, J. O. D'eath, Mrs. H. Denny, W. T. Dring, Sqd.-Ldr. C. Everitt, Mrs. C. Everitt, Miss S. A. Fothergill, Miss D. Gask, H. J. Harman, G. T. Iles, Miss S. R. Joseph, Miss E. M. Knobel, Miss M. H. Knobel-Harman, G. C. Lynch, F. Mosford, G. S. Mottershead, S. Murray, K. A. Norris, A. A. Prestwich, D. M. Reid-Henry

S. Sanderson, R. C. J. Sawyer, D. Seth-Smith, Miss I. Stoney, A. C. Soanes, J. A. Swan, Mrs. J. A. Swan, Mrs. P. V. Upton, E. N. T. Vane, N. S. Walker, C. H. Wastell, Mrs. C. H. Wastell, Mrs. G. Wheatley, H. Wilmot.

Guests : J. A. W. Barthorp, C. G. Bellars, M. Eden Cairns, S. A. Croucher, Mrs. S. A. Croucher, A. E. Darnton, Miss K. Dring, Lord Evershed, Miss R. Ezra, Miss P. Healey, Miss B. Holton, K. S. Jenner, Captain C. W. R. Knight, Esmond Knight, C. J. Main, Mrs. R. Maurice, Mrs. S. Murray, Mrs. M. Murray-Smith, Mrs. M. E. Nichols, Mrs. G. Norris, Mrs. E. M. Rolfs, Mrs. D. Seth-Smith, Miss I. Smith, Mrs. H. M. Vane, Miss H. A. Wiese, Mrs. H. Wilmot, W. A. Wood.

Members of the Club, 41 ; guests, 27 ; total, 68.

The Chairman, opening the meeting, said she had great pleasure in welcoming several important guests : Miss Ruth Ezra, Lord Evershed, Master of the Rolls, Captain C. W. R. Knight and Esmond Knight. The last two were well known in their own right, but they were really only present on this occasion by virtue of the fact they were attendant on "The Great Mr. Ramshaw". It was in September, 1949, that "Mr. Ramshaw" was last a guest of the Club. The intervening years had dealt kindly with him and he now appeared to be in, if possible, even finer feather, despite his 28 years.

Captain Knight was in reminiscent mood and, in his inimitable manner, recalled some of the startling experiences that had befallen the pair of them during their world-travels together.

The sustained applause of the audience indicated their appreciation and enjoyment of this remarkable and unique partnership.

"Mr. Ramshaw" later held court with great regality except, let it be but whispered, he forgot himself to the extent that he "white-washed" a lady member's dress, but, in extenuation, this was due to interference by a third party.

This was the last meeting of the 1955-56 session.

ARTHUR A. PRESTWICH,
Hon. Secretary.

* * *

NEWS AND VIEWS

The Silver Medal of the Avicultural Society of South Australia has been awarded to Mr. N. Potter for breeding Smith's Finch-Lark. Bronze Medals have been awarded to Mr. Thomas for success with the Tawny Frogmouth; Mr. Turner, Bristle Bird ; and Mr. Packer, Orange Chat.

* * *

M. Willy Friling, Brasschaat, Nr. Antwerp, last year had the satisfaction of breeding the Rhea (*Rhea americana albescens*). Five were hatched by the male ; one young one was accidentally crushed by him during the night when they were a month old. The four others were successfully reared.

* * *

The first breeding reports of the season are now coming in. Claude Payne, one Derbyan Parrakeet well-grown ; two Red-collared Lorikeets died at three weeks. Mrs. J. Dalziel Birrell, Vernal Hanging Parrots sitting on four eggs. Raymond Sawyer, Roulrouls have constructed a domed nest and have four eggs.

* * *

Edward Tanner, Overseer of Birds, Regent's Park Zoo, retired on 15th March after 47 years. The Council of the Zoological Society of London has awarded him the Society's Bronze Medal in recognition of his long service to the Society. Many of our members must, at some time or another, have had good cause to be grateful to " Ted " Tanner for guidance and help ever-willingly given. All members will wish him well in his retirement.

A. D. J. Gregory, Head Keeper, Eastern Aviary, has been appointed Overseer of Birds.

* * *

We would impress upon members the fact that it rests with them to find and propose new members, and that no amount of energy on the part of the Officers can make up for apathy in this respect.

* * *

Round the Zoos.

Whipsnade Park.—A notable achievement last year was the breeding of a Citron-crested Cockatoo. Unfortunately, the young one was destroyed by its parents when about four months old. Two Yellow-headed Conures (*Aratinga jandaya*) were reared, and one Barraband's of three hatched.

The following Geese were reared : 2 Snow, 5 Greater Snow, 8 Blue Snow, 2 Emperor, 6 Barnacle, 2 Canada, 8 Red-breasted, 12 Upland, 2 Egyptian ; 10 Carolina Ducks, 1 American Wigeon. Pheasants ; 2 Temminck's Tragopan, 2 Black-breasted Kalij, 4 Silver, 4 Golden ; 15 Common Peafowl ; 30 North American Turkeys.

Amsterdam.—Arrivals, six King Penguins.

Antwerp.—The Razor-billed Curassows (*Mitu mitu*) last year hatched and reared two young—a pair.

San Diego.—The young Banksian Cockatoo bred last year is thriving and proudly displaying its striking colours. "Belle" the Kiwi has now been in residence over one year.

Edinburgh.—The Penguins, 1955 : King, laid 12 eggs from which 9 chicks were reared ; Gentoo, two chicks out of four were reared ; Ringed, two chicks were hatched but died ; Macaroni did not breed. Arrivals, 29 King and 27 Gentoo.

The Quaker Parrakeets bred on two occasions and seven young were reared. Black Vultures also bred successfully. Golden Eagles and Rüppell's Griffon Vultures laid but did not hatch.

A. A. P.

* * *

REVIEW

VOGELBILDER AUS FERNEN ZONEN-PAPAGEIEN. By ANTON REICHENOW. Second edition, edited and enlarged by JOACHIM STEINBACHER, with the collaboration of HANS VON BOETTICHER. Verlag GOTTFRIED HELENE. Pfungstadt Darmstadt, Germany. Price 120 DM. (£10 10s.)

Dr. Reichenow's monumental work on the parrots of the world which was published in 1883, and which is a classic in books of its kind, has been extremely rare for the last twenty years, and those copies which have been obtainable have commanded a price far above that possible for the average aviculturist. The initiative of Dr. Steinbacher in preparing a second edition of this book is therefore received with the greatest satisfaction. Dr. Steinbacher states in his foreword that when he was considering the possibility of writing a book on parrots for ornithologists and serious aviculturists it soon became apparent that none could better that of Reichenow. The descriptive text necessarily needed a good deal of revision in view of the great increase in knowledge during the last seventy years with regard to the occurrence and distribution, relationship and nomenclature of the various species. The German names of the individual species have been altered to follow those adopted by Karl Neunzig in *Fremdländische Stubenvögel*, but the old names are also included. In order to maintain the character of the book as far as possible, the general introduction to each plate has been kept in its original form, except for small corrections. But an innovation has been introduced by the addition of short summaries of the condition in captivity of the various groups, in order to make the book more useful with regard to the keeping and care of birds. The references in the original text to A. E. Brehm's *Gefangene Vögel* have therefore been omitted. These summaries, written by an aviculturist of the wide experience of Dr. Steinbacher,

indeed make the book of great value to aviculturists and contain such information as the special requirements of the various species, food to be given, character, tameness, etc.

The systematic list of species given follows that of Peters' *Checklist of the Birds of the World*, vol. iii, 1937, with slight modifications in so far that the geographical races are not mentioned. As in the original edition the names of the species are given in English and French as well as in German and Latin.

All the colour plates which appeared in the first edition are included but the reproduction does not reach the same standard. An additional plate, making a total of 34, by Karl Grossman, has been added in order to include eight species some of which were not known at the time of the first edition, these are Masked, Black-cheeked, Nyasa, and Fischer's Lovebirds and Princess of Wales, White-winged, Orange-flanked and Amboina King Parrakeets. Unfortunately this plate is poor.

In all, 326 species are dealt with in this edition, and Dr. von Boetticher has collaborated with Dr. Steinbacher in the preparation of all the text in order that the present day requirements of scientific ornithology should be complied with in every way.

In these days when the ban on the importation of parrots is in operation in so many countries and the breeding of these birds in captivity becomes ever more important, this book is particularly welcomed as an incentive and aid to this end. Unfortunately, the edition is limited, and those desirous of possessing it should not delay in procuring a copy.

P. B-S.

* * *

NOTES

CORRIGENDUM

In the article "The Nesting of the Malachite Sunbird" March-April issue page 50, line 5, the word "Malachite" should be inserted before "Sunbirds" otherwise the next few sentences become meaningless.

CANDIDATES FOR ELECTION

- H. BANKS, 26 Bishopscote Road, Luton, Beds. Proposed by Miss K. Bonner.
 I. W. M. BARDELL, 6 Browning Close, Fairbridge Park North, Umtali, Southern Rhodesia. Proposed by Terry Jones.
 R. BROCKBANK, 14 Lansdowne Street, Burnley, Lancs. Proposed by Miss K. Bonner.
 COLIN A. BURNET, "Murrunjai," Merriwa 3 N., N.S.W., Australia. Proposed by A. A. Prestwich.
 MELVIN B. DYSTER, M.D., 3231 Porter Road, Niagara Falls, New York, U.S.A. Proposed by A. A. Prestwich.
 H. A. GERRITS, 667 Rijkssstraatweg, Wassenaar, Holland. Proposed by A. A. Prestwich.
 JAMES F. GINN, 451 Metropolitan Pl. S.E., Atlanta 16, Georgia, U.S.A. Proposed by Terry Jones.
 NICHOLAS GRAVEM, Jr., 200 Elm Avenue, Mill Valley, Calif., U.S.A. Proposed by Miss K. Bonner.
 Mrs. W. H. GREEN, 8389 Redwood Avenue, Fontana, Calif., U.S.A. Proposed by A. A. Prestwich.
 JAMES HARRISON, Carleton Hill, Penrith, Cumberland. Proposed by Terry Jones.
 A. JEWELL, 54 Oxford Road, Burford, Oxfordshire. Proposed by A. A. Prestwich.
 C. D. JORDAN, Manor House, Newton, Swansea. Proposed by W. C. Hall.
 S. MULCAHY, 21 Roberts Road, Haddenham, nr. Aylesbury, Bucks. Proposed by Miss K. Bonner.
 J. POTTER, Linden, Chase Ridings, Enfield, Middx. Proposed by Mrs. J. Potter.
 PERRIN G. RADEMACHER, 1700 Manchester Road, Wheaton, Illinois, U.S.A. Proposed by A. A. Prestwich.
 J. M. REEVE, Ash Lea, New Station Road, Bolsover, nr. Chesterfield. Proposed by A. A. Prestwich.
 Mrs. J. E. ROBINSON, F.Z.S., Flat 1, 63 Nightingale Lane, Balham, S.W. 12. Proposed by Miss K. Bonner.
 D. ROUSE, "Mirasol," Frithwood Lane, Billericay, Essex. Proposed by Miss K. Bonner.
 MELVILLE M. STRANN, 8729 Shoshone Avenue, Northridge, Calif., U.S.A. Proposed by Terry Jones.
 Mrs. F. STROUD, 105 Priory Road, Hastings, Sussex. Proposed by Miss K. Bonner.
 CLIFFORD SYKES, Route 1, Box 350, Kenosha, Wisconsin, U.S.A. Proposed by Terry Jones.
 Private 1st Class JOHN W. TAYLOR, Co. B, 656th Engineer Batt. (T), A.P.O. 403, U.S. Army, Germany. Proposed by D. M. Reid-Henry.
 S. E. TAYLOR, 93 Ty-glas Road, Llanishen, Cardiff. Proposed by A. A. Prestwich.
 ANDREA TIPÀ, Via Priaruggia 11/2, Genoa, Italy. Proposed by Terry Jones.
 J. C. WHITE, 406 Lindberg Drive, El Paso, Texas, U.S.A. Proposed by Terry Jones.

READMITTED

JOHN BYRNE, 13 Hartfield Crescent, Wimbledon, London, S.W. 19.

NEW MEMBERS

The one hundred and forty-five Candidates for Election in the March-April, 1956, number of the AVICULTURAL MAGAZINE were duly elected members of the Society.

CHANGES OF ADDRESS

- C. T. DALGETY, to Broomy Lodge, Linwood, Ringwood, Hants.
 SVEND T. HANSEN, to Ny Skelgaardsvej 21, Kastrup, Amager, Denmark.
 S. B. JONES, to Five Oaks, 97 Liverpool Road, Lydiat, Lancs.
 A. P. SHEARING, to Corner Cottage, Woodlands Park, Woodlands Lane, Stoke d'Abernon, Cobham, Surrey.

CHANGE OF STYLE

Lord TOLLEMACHE, Helmingham Hall, Stowmarket, Suffolk.

MEMBERS' ADVERTISEMENTS

The charge for Members' advertisements is ONE PENNY PER WORD. Payment must accompany the advertisement, which must be sent on or before the 15th of the month to A. A. PRESTWICH, 61 CHASE ROAD, OAKWOOD, N. 14. All members of the Society are entitled to use this column, but the Council reserves the right to refuse any advertisements they consider unsuitable.

WANTED

Male Green Singing Finch, male Alario Finch, large fit birds, please.—K. C. KIRK, 54 Station Road, Sutton-in-Ashfield, Nottinghamshire.

AUSTRALIAN PARROTS IN CAPTIVITY

A series of articles by Alan Lendon published in the Avicultural Magazine. A full account of 60 species of Australian Parrots is included in the book which deals where possible with the author's personal experiences in keeping them in captivity in South Australia.

There are one coloured and seven photographic plates. Stiff paper cover. Price 7s. 10d., post free. Published by the Avicultural Society, and obtainable from the Hon. Secretary, 61 Chase Road, Oakwood, London, N. 14.

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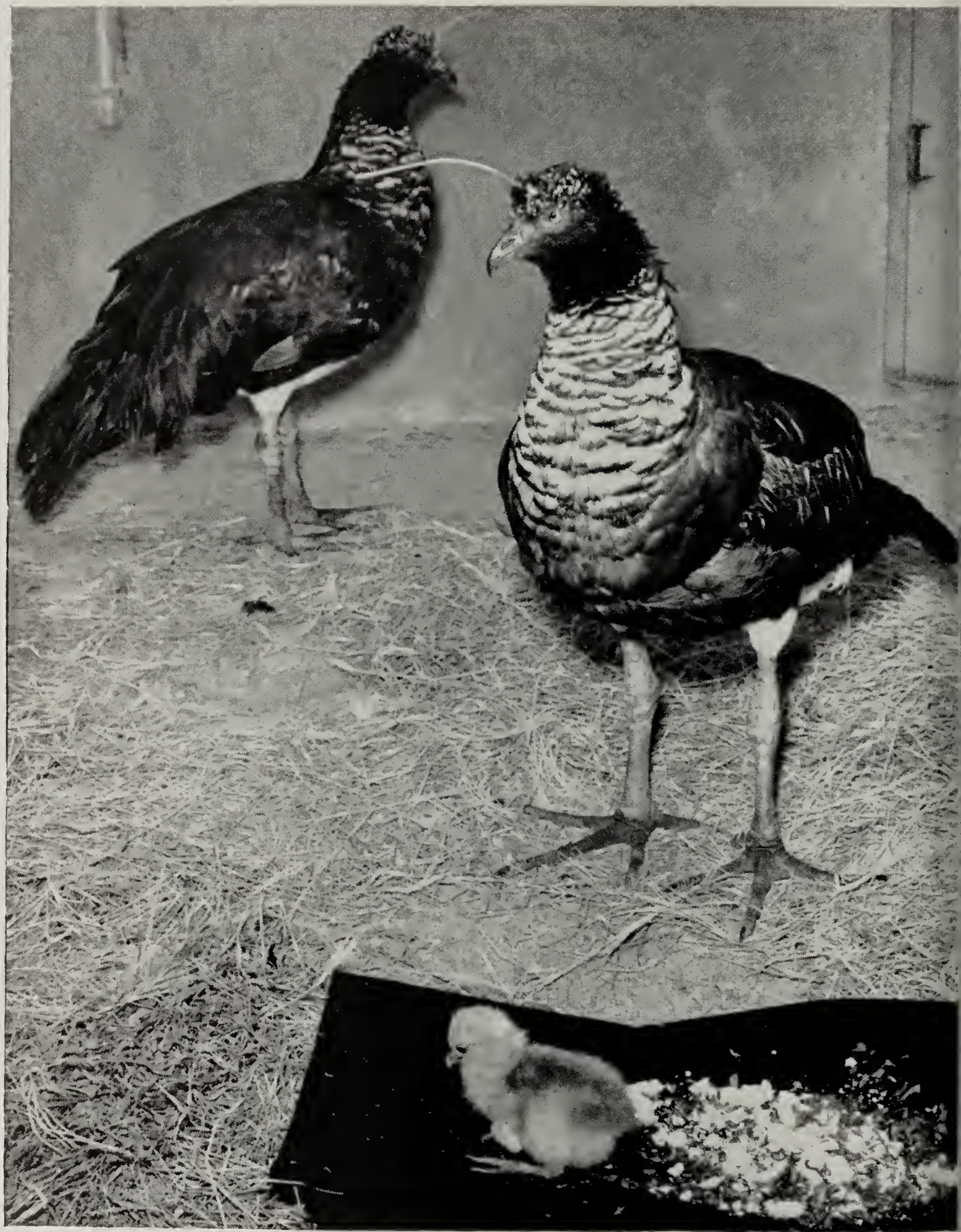
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PAIR OF HORNED SCREAMERS AND CHICK.

This chick was hatched in the Zoological Gardens of San Diego, California, 17th May, 1956. (*Photo courtesy of Richard van Nostrand.*)

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JULY—AUGUST, 1956

BREEDING OF THE HORNED SCREAMER

By KENTON C. LINT (Curator of Birds, San Diego Zoological Gardens,
California, U.S.A.)

The first successful breeding of the Horned Screamer, *Anhima cornuta*, in captivity in the United States was achieved this year in the San Diego Zoo, when an egg was hatched on 17th May, 1956. A search of the literature has not revealed a previous record of this rare member of the screamer family, *Anhimidae*, reproducing in captivity.

The Horned Screamer is a primitive semi-aquatic bird, characterized by having a hen-like beak, medium-sized neck, very inflated crop, two powerful spurs on the front of each wing, and is remarkable for the "horn", or slender caruncle, 5 to 6 inches long, it bears on its forehead. In colour, the soft feathers on the top of the head are grey, with black tips. The cheeks, throat, upper neck, wings, and tail are dark black. The inner secondaries and greater wing-coverts have a green metallic sheen, and the lesser wing-coverts are buff in colour. The feathers of the lower neck and upper breast are silver grey, broadly banded with black, and those of the abdomen pure white. The eyes are orange, the beak black with a white tip, the "horn" white, and the feet slate grey. Buff shoulder patches are evident in both sexes and both sexes are alike in plumage. The Horned Screamer weighs eight to ten pounds, usually the size of a turkey hen.

A native of Guiana, North-Western Venezuela, and Brazil, this bird was described in Latin by Marcgrave and Peso, 1648, *Nat. Hist. of Brazil*, under the name "*Anhima*". *Anhima*, Brisson, *Orn.*, 1, 1760, p. 48; 5, 1760, p. 518. Type by tautonymy, *Anhima (anhima)*—*Palamedea cornuta* Linné, cf. Hellmayr, *Field Mus. Nat. Hist. Publ. Zool.*, Ser. 12, 1929, p. 498.

We purchased our pair from Louis Ruhe, Inc., New York, in 1951, as year-old birds. They were rather difficult to acclimatize and several locations were tried in the Gardens before a suitable area was selected

conducive to propagation. Five years of work are represented in the successful breeding of this species.

The hen laid her first egg 24th December, 1955. Four successive eggs completed this first clutch. Both birds participated in incubating the eggs for a period of six days when cold and wet weather discouraged them and they quit their nest. They were encouraged to continue to set but the project was abandoned on the sixth day. Two eggs were found to be fertile but had died on the sixth day. New nesting materials were furnished to encourage nesting. Garden snails were fed as a supplement.

Re-nesting was not observed until the 7th March, 1956, when both birds again started nest-building. Fifteen days of courtship and breeding followed and on the 22nd March, 1956, the first egg of the second clutch was laid. Four more eggs were laid on the 24th, 25th, 26th, and 29th of March. More adverse weather came, rain, hail, and wind storms.

The nest and eggs as well as the parent birds took a terrific beating from the elements, and how we worried after all of this work. This experience upset and disturbed the birds and we decided to incubate the eggs artificially.

On 4th April we placed the five eggs in an electric incubator and did a bit of praying. Forty-four days produced a baby chick and it was worth all of the anxiety and work necessary to hatch it. Two eggs were infertile and two failed to hatch.

This chick lived for a period of eight days and died because of its unabsorbed egg yolk.

Of the 247 species of birds we have hatched in the Gardens we consider this breeding record one of the most important in the history of the Zoo.

* * *

SOME FIRE-FINCHES AND THEIR BEHAVIOUR

By C. J. O. HARRISON (Tooting, London, England)

The following notes consist of observations on captive Fire-Finches. When I first became interested in these birds, I searched through all available literature to find out what had already been written concerning their behaviour, hoping to compare my notes with some standard description. I was surprised to discover that hardly anything had been recorded about them. It is understandable that this might be difficult in their native haunts, but the birds have been well known in captivity for a long time, the Senegal Fire-Finch being bred in captivity for the first time by the Rev. C. D. C. Farrar in 1898.

In the circumstances it seemed worthwhile to record as much as possible about the birds of this genus which I was able to keep. It is always a little dangerous to draw conclusions from the behaviour of captive birds. If too few individuals are studied, there is always the possibility that one may be recording variations of behaviour peculiar to one particular bird; while the environment is, in any case, artificial, and the confining presence of a cage or aviary will tend to prevent a bird from behaving in a completely natural manner.

In spite of these disadvantages, it is still possible to learn much. I have here confined my records largely to calls and postures; which are probably the aspects of behaviour least affected by the environment.

My observations have been erratic and confined to short periods of the day, usually in the early morning. The notes are, therefore, necessarily incomplete and sketchy.

The Fire-Finches are small Waxbills of the genus *Lagonosticta* and occur, in one species or another, over most of Africa. These birds, and those of the closely related genus *Estrilda*, to which many of the typical Waxbills belong, are very similar in habit and appearance. Systematists have found it difficult to decide to which genus some of these species should be assigned. I had hoped to discover, while studying these birds, some peculiarity of behaviour which might help to separate one genus from another.

Of the Fire-Finches normally available to aviculturists in this country, the Senegal Fire-Finch (*Lagonosticta senegala*) may be regarded as a typical Fire-Finch, while the Lavender Finch (*Lagonosticta rulescens*) is a species about which there is some disagreement. I was lucky enough to obtain an odd specimen of the Bar-breasted Fire-Finch (*Lagonosticta rufopicta*), a species which seems to be imported by chance in consignments of commoner birds, and I was able to compare the three.

In the notes which follow I have, for convenience, dealt with the Senegal and Bar-breasted Fire-Finches comparatively, and grouped my notes on the Lavender Finch at the end.

THE SENEGAL AND BAR-BREASTED FIRE-FINCHES

Appearance

The Senegal Fire-Finch is the smallest of the three, being little more than 3 inches long, while the other two are slightly larger. The cock has a deep scarlet colour with brown mantle and wings and buff under tail-coverts. The rump, upper tail-coverts, and basal half of the tail are scarlet and the rest of the tail is black. There are a few very minute white spots on either flank, which are only visible at very close range, and a thin yellow rim encircles the eye. The hen is olive-brown on the back and head and olive-buff beneath. Her white spots are a

little larger than the cock's, more numerous at the sides of the breast and extending across it. There is a small patch of red just over the eye and the eye-rim is silvery-grey. The rump and tail are coloured like those of the cock. The bills of both sexes are red, becoming paler towards the base.

The Bar-breasted Fire-Finch is a little heavier and cobbier in build with a proportionately larger tail. It is dark brown on the back and this colour continues up over the crown of the head. The breast is rose-pink in colour, deepening into red on the throat, ear-coverts, and forehead. Most of the breast feathers have tiny white terminal bars which appear most numerous towards the sides of the breast. The sexes are described as having similar plumage, but an examination of museum skins leads me to believe that the hen may have lighter, more pink, ear-coverts and throat. The rump and basal half of the tail are red, the rest of the tail being black. The bill is rather larger than that of the Senegal Fire-Finch and is red with a blackish stripe along the culmen. The eye-rim is silvery-grey in this species.

General Behaviour

The behaviour of the Senegal Fire-Finch is a little difficult to describe, since it has no particular peculiarities. It is bold and inquisitive and rather sparrow-like in its general demeanour. It appears to be a ground feeder by preference and perches in an orthodox fashion without any tendency towards acrobatics.

The Bar-breasted Fire-Finch differs noticeably in its behaviour. It has a rather furtive manner and in a cage it seems a very timid bird. When I first bought it I was rather distressed by the alarm which it showed whenever I approached the cage and, as an experiment, I put it in a tuft of heather. It immediately darted behind this and as soon as it was concealed from view, it crouched there on the floor of the cage, quite still and silent, until I moved away. Since then it has always adopted this and scuttled away into hiding with head low and tail cocked high when I approach too near, but it is gaining courage and now tends to remain in view and scold loudly. When it escapes into the room it behaves in similar fashion and, instead of fluttering at the window, it goes to ground beneath the furniture, crouching silently on the ground for as long as danger threatens.

In general, it moves in a more crouching posture than does the Senegal Fire-Finch. Its behaviour suggests that, in the natural state it is accustomed to haunting fairly thick cover, to which it can retire at the first threat of danger. Like the preceding species, it appears to be principally a ground feeder. For lack of a suitable mate, I paired it with a Senegal hen, but neither appears to have modified the behaviour of the other.

As regards roosting, I find that, at least where the specimens that I

possess are concerned, although both species have constructed nests in cardboard boxes, the Senegal Fire-Finches persist in roosting on a bare perch, while the Bar-breasted appears unhappy unless partially concealed and prefers to roost in the nest. Even after the nest had been constructed, the Senegal hen that was with the latter roosted just outside the entrance to the nest while he was within.

Call-notes

In the Senegal Fire-Finch the call-note is a soft and high-pitched but fairly melodious "twee" or "dwee" note. I have detected at times a slight but distinct difference between the call-notes of cock and hen; that of the cock tending to be a flatter and slightly harsher call, but I have not been able to assure myself that this is always so. This note seems to vary considerably, according to the bird's emotional state.

The call of the Bar-breasted Fire-Finch is short and sharp, higher in pitch and more metallic. It is a slightly piercing note, rather unpleasant to the ear.

When this bird was caged alone it had a habit, when flying back and forth in its cage, of keeping up a continual succession of call-notes. These were quite distinct from one another and of varying pitch, but followed in rapid succession all the time that the bird was on the move. Such records as exist of the bird in its native habitat suggest that it habitually associates in small flocks, and it seems possible that these continual call-notes may be a form of contact call enabling the birds to keep in touch while moving through the vegetation. But, in view of the difficulties which I have had in identifying the casual, low-intensity song which seems to occur in these species, I am not prepared to rule out the possibility that it may be of this nature. I have not heard a similar type of continual calling from the Senegal Fire-Finches.

Song

The Senegal Fire-Finch has a pleasant and simple little song. It is a dominant phrase which is loud, clear, and melodious and usually consists of three notes with an interrogative inflexion—"dwit-ee-vee". The song is a series of variations on this phrase, sometimes of two notes only, and each phrase preceded by two or three low chirps. There is a low-intensity version of this song which consists simply of two chirps and single or double notes—"dwee" or "dwee-re". These are uttered at short intervals and seem quite disconnected. When I first heard this type of song I mistook it for a series of rather tense call-notes.

The most interesting fact about the song is that it appears to be uttered only in the absence of the hen, or, at least, when the hen is not visible.

A cock began to sing immediately after a hen which was with it had died, and continued to sing frequently until another hen was introduced, whereupon it immediately stopped singing. Song was not resumed again until a nest had been built. When this had been partly lined, the hen would occasionally enter it and, if she stayed in it for more than a few seconds while the cock was outside, he would commence to sing, but cease immediately the hen reappeared. It was, in fact, possible to tell, if one was within earshot, on what occasion the hen was in the nest and for approximately how long. The cock showed a similar tendency to sing when the hen escaped from the cage and flew to another part of the room.

The Bar-breasted Fire-Finch has a vigorous and rather exuberant song which sounds a little harsh and tuneless. It consists of a series of short phrases and tends to continue for long periods. It seems at first quite formless and composed of an apparently accidental sequence of high metallic notes and low nasal notes. After a time it becomes apparent that the song consists mostly or entirely of variations on one or two dominant phrases.

Occasionally the cock would pursue the Senegal hen that was with him, adopting a rather upright posture and repeating over and over again a short phrase of three notes. This consisted of the high-pitched call-note, followed by a low and very nasal note, and then another of rather higher pitch. This occurred before the two were paired and I am still not sure if his intentions were amatory or aggressive. The hen never stopped to find out. This little phrase occasionally occurred in his song.

He sang continually when caged alone, but, when the Senegal hen was introduced, song became rather infrequent, though it was nearly a month before they became sufficiently tolerant of one another to perch side by side. There was a fresh outburst of song when the cock began nest-building, though the song output was not nearly so great as when he was solitary.

His displaying was accompanied by short phrases of the typical song.

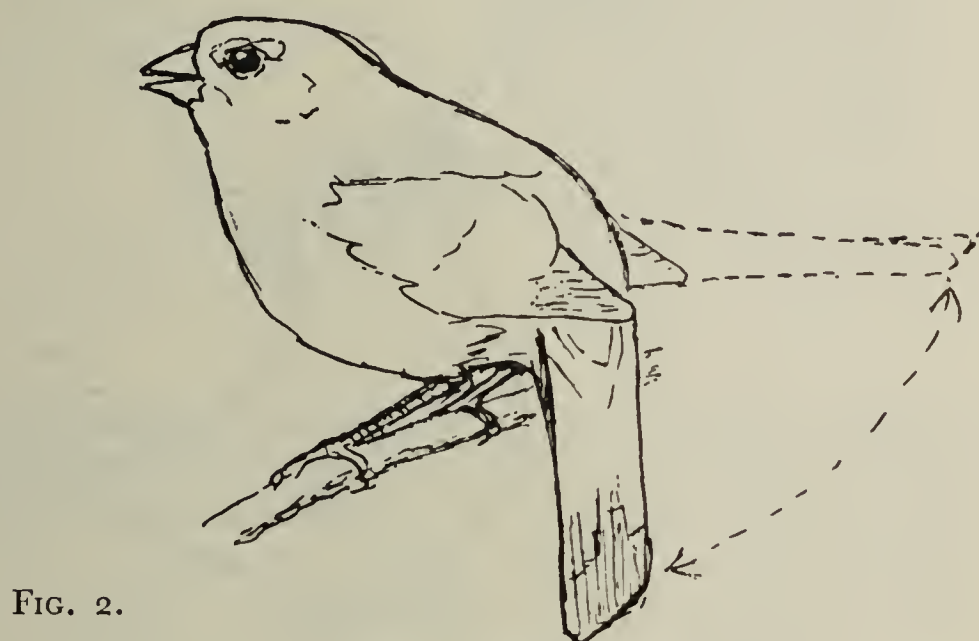
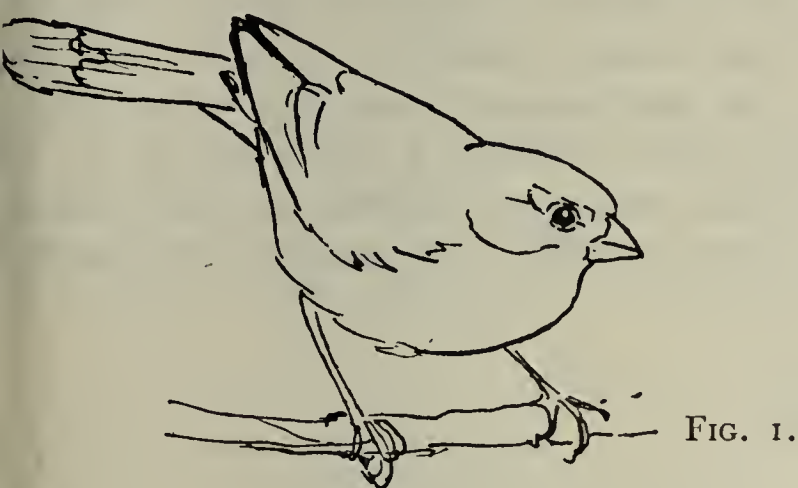
Alarm-notes

The call-notes and songs of the two species are so definitely different that it comes as a surprise to find that the alarm-notes are so similar that it is difficult to tell them apart. The alarm call of one species produces an instant reaction from the other.

The call is an abrupt "chuc" note. A slight difference can be detected when the two species are heard calling together, that of the Senegal Fire-Finch having a nasal quality and a slightly lower pitch.

This call is accompanied by characteristic movements of the tail. In the Senegal Fire-Finch it is jerked vigorously to one side or the other with each note, often being momentarily held bent to one side

Fig. 1). Alternatively, it may be flexed up and down from a horizontal down to an almost vertical position (Fig. 2). On these occasions the tail is expanded to about twice its normal width. In both sexes the rump and tail form a conspicuous black and red pattern which becomes particularly prominent during these movements.



When the Bar-breasted Fire-Finch gives the alarm call, it crouches on the perch and jerks its slightly raised tail sideways with each note (Fig. 3). During this movement the tail is half-spread on the side towards which it is jerked. There appears to be no vertical movement of the tail in the posturing of this species.

Nest-call

In the early part of the breeding cycle, the cock Senegal Fire-Finch often entered the nest and, once inside, proceeded to give a distinctive call which is very difficult to describe. It seemed to consist of a rapid series of soft notes which ran together and had a continuous churring undertone to them. The function of the call appeared to be to attract the hen into the nest and it was usually effective. I have not heard this call used at the nest by the Bar-breasted cock, but, when I had occasion to catch him and greatly alarmed him by doing so, he crouched in one corner of the cage afterwards and for several minutes gave what appeared to be his version of this call, though it was shriller and sharper in tone.



FIG. 4.

Display

The Senegal cock first displayed to the hen on the day after that on which she was introduced into the cage and continued to do so throughout the nest-building period.

The display appears to follow a set pattern. The cock seizes a piece of grass or a large feather in its bill. This object is held by its tip so that it projects straight out in front of the bird. This is, incidentally, the usual method by which it holds the feathers which it carries to the nest. It flies to a perch with a loud and distinctive whirr of wings and takes up a rather rigid posture with the breast thrust out and the head thrown back (Fig. 4). It commences to make short hops in a

stiff, jerky fashion. The hen appears to recognize this as a signal and flies to join the cock, which immediately commences the display.

This consists of a slow bounce on the perch. Holding its head high and with tail slightly cocked, the cock pushes his body upwards with a series of vigorous jerks so that it appears to bounce up and down on the perch. The movement seems to be an alternate straightening and relaxing of the legs. The upwards thrust is executed with considerable vigour and, as far as I can make out, the bird's feet appear actually to leave the perch for a moment and a series of distinct thuds can be heard when the display occurs on a light perch. There are usually four or five of these jerks. I have never seen less than three and on one occasion there were seven in succession.

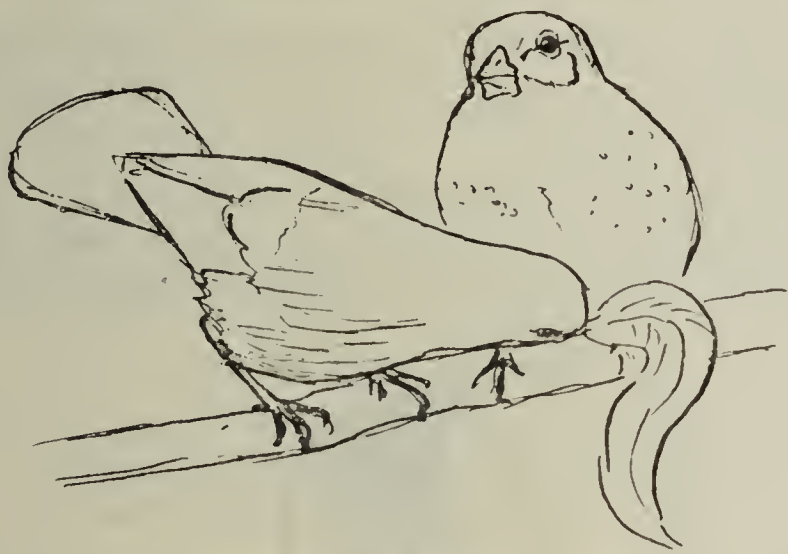


FIG. 5.

This movement takes place immediately beside the hen and the last bob is followed straight away by a deep bow in which the head and neck are stretched forwards and across in front of the hen, the head turning inwards so that the object in the bill is presented just below her breast. This bow is accompanied by a click-like "stip" note, which is the only sound made during the display (Fig. 5).

On one occasion, when I was able to view the display more closely, I discovered that, during the first part of the display, the cock's tail was bent towards the hen and held at an angle to the body. This habit of holding the tail to one side also occurs during the alarm calling and at other moments of high emotion and appears to be a primary characteristic in the postures of this species.

The complete display may be repeated several times in succession and usually ends when the cock drops the object which he is holding and makes a movement towards the hen. Every time that I have witnessed the display the hen has immediately flown away at this point, but frequently returns a moment later to preen the cock.

When the cock was solitary, he indulged in a form of undirected display. When perching, he would suddenly stretch his neck and bow forwards until the neck was horizontal and the bill pointing downwards. This was accompanied by the "stip" note and appeared to

represent the bow of the display. It was, however, directed straight forwards and not at an angle towards the perch, as it would have been had a hen been present. There was none of the jauntiness of posture that occurs in the real display; the bird merely tended to crouch with feathers a little fluffed.

This behaviour occurred during the same period as the song. I first saw it when a hen had died. The cock sang frequently and performed this bowing on a number of occasions. At that time I had not seen the display and thought that it was suffering from some obstruction in the throat. This short display ceased, as did the song, when a new hen was introduced; but it recommenced, though rather rarely, when the cock began to sing while the hen was in the nest.

The Bar-breasted Fire-Finch's display took some time to materialize.

Having been unable to pair the cock, I provided him with a Senegal Fire-Finch hen for company. The hen appeared to be frightened by the cock and tended to avoid him, and it was not until after nearly six months that the cock began to nest-build and displayed at last. His behaviour was just like that of the other Fire-Finches.



FIG. 6.

He picked up a thin piece of grass such as he was using to construct the nest and flew to a perch. Here he postured, stretching himself up rather taller than the Senegal did, with breast feathers a little puffed out and the tail spread and slightly depressed (Fig. 6). The hen ignored him and fed on the floor of the cage. He commenced to fly from perch to perch, backwards and forwards, with tail still spread and his whole body held at an upward slant. During each short flight the wings were beaten rapidly with a loud and distinctive whirr, quite different from the sound of his ordinary flight. When the hen

did perch nearby, he performed a bobbing movement precisely similar to the bounce of the Senegal Fire-Finch, but did not follow it up with a bow. This could have been due to the tendency of the hen to move away immediately; but, since the cock has never shown any signs of this movement either with, or in the absence of, the hen, it seems possible that the bow does not occur in the display of this species.

During the display and in pauses between the flights, he sang short but vigorous song phrases.

Aggressive(?) Display

When I first introduced a new hen into the cage with the Senegal cock, I witnessed what appeared to be aggressive or defensive posturing. The cock stood quite still in a very tense attitude. His head feathers were sleeked down and his head pressed low on his shoulders. His tail was held to one side, at an angle to the body in a lateral plane, so that it appeared out of joint. The wing on the side towards which the tail was bent appeared to be raised slightly and the whole posture brought into view and emphasized the bright and contrasting red and black colouration of the rump and tail region. The hen was exploring the cage, but would return at intervals and circle round the cock with her tail held in a similar fashion. The cock tended to peck at the hen at first, but gradually relaxed and within about half an hour appeared to accept her presence. Within twenty-four hours he had begun to display.

This posture looked as though it was either aggressive or defensive, but might possibly have represented some form of recognition display at the first encounter of a pair, the plumage pattern exposed being common to both and peculiar to the species.

Nest-building

Two nests were made, one by a Senegal pair and the other by the Bar-breasted cock and Senegal hen. In the latter case, eggs were laid but nothing came of it.

In both cases the nest-building was done by the cock. The hen was usually present and often entered the nest. In the case of the Senegal nest, she was inside for a few minutes on several occasions when the cock was bringing material for the nest lining and she may have assisted in lining and shaping the nest cavity. Both nests were constructed in boxes, both were domed, and that of the Senegal Fire-Finches had a $2\frac{1}{2}$ -inch tunnel to the nest cavity from the entrance.

I gave both birds the same choice of natural and artificial materials. The Senegal cock used fine grass for the outer part of the nest, lining this with plant fibre, wool and sisal fibre, and then lining the nest cavity with feathers. It seemed to use an enormous number of feathers. I put in handful after handful of chicken feathers from an old pillow,

and still it asked for more. The feathers that were used were carefully selected. The cock would pick up one by the tip of the quill so that it projected straight out in front of him, then rotate it in his bill and shake it. If it was broken or limp, or if the quill was entangled in the soft rami of the feather base, it was rejected. The feathers were carried into the nest one by one.

I put out a whole spectrum of coloured wools to see if there was any marked preference for a particular colour. I had not reckoned with the importance of the physical appearance of the material. Two colours, a grey and a dull green, were just a shade thinner than the rest, hardly noticeable to the masculine eye, but these were taken first; while the orange wool, which was no thicker than the rest but was distinctly fluffier, was completely rejected.

The Bar-breasted Fire-Finch chose much coarser material for the outside of the nest. This was the dead foliage of Montbretia. Inside this dead grass and a little wool was used and finally a lining of fine grass. No feathers were used though many were available. The cock did pick one up on several occasions but never attempted to carry one to the nest. The Senegal hen, when she came off the nest, would pick up a feather and carry it around for a moment or two, though on only one occasion did I see her take one into the nest. Later on, when I came to examine the nest, this was the only one which I found.

THE LAVENDER FINCH

Description

In this species the plumage of both sexes is almost precisely similar. The general colouring is ashy-grey, paler on the throat and breast. There is a black streak from the base of the bill, passing through the eye and terminating just behind it. The rump, upper and under tail-coverts and tail are bright scarlet. There are a number of distinct white spots on the hinder flanks, bordering the scarlet area. These have been present in all the specimens which I have seen, but appears to have been overlooked in some plumage descriptions. The bill is blue-grey with a reddish tint towards the base. There is no coloured rim to the eye.

Behaviour

This species differs noticeably from the other two in its feeding habits. Whereas the others were both ground-feeders, the Lavender Finch is obviously accustomed to feeding in vegetation above the ground. In contrast to the others, it is as agile as a Tit (*Parus* sp.) and is quite at ease when feeding by hanging head downwards. I have seen one hang by one foot from the top of a wire cage while removing something from the other foot and it seems to be a regular practice for it to carry an object to a perch and hold it down with one foot while it examines it, a feat for which the other Fire-Finches

have shown not the slightest inclination. The other two species can cling to a vertical wire surface if necessary, but seem unable to take advantage of a suspended millet spray, while the Lavender Finch will feed on this rather than pick up seed from the floor of its cage.

In the wilds insects appear to form part of its food and in captivity it will investigate every crack and cranny in a manner which suggests that it expects to find insects concealed there.

Call-note

The usual note heard from the birds is a short, shrill "squi", very high in pitch. I am not certain whether this note is, in fact, one by which the birds maintain contact with one another or represents a state of partial alarm.

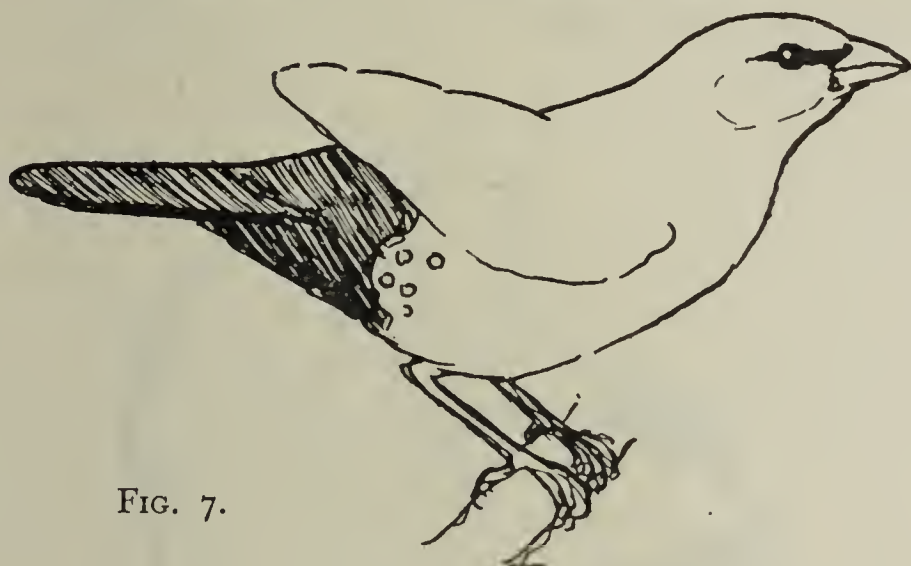


FIG. 7.

Alarm-note

This call bears no resemblance to that of the other species. It is an intense version of the call-note described above, a shrill, explosive "squeeb". This species does not jerk its tail vigorously like the other two. But, when it is alarmed, it adopts a tense, nervous posture with the feathers tight against the body so that the bird appears rather elongated. The wing tips are raised slightly and held together over the back. This exposes the red upper and under tail-coverts and also the white spots at the rear of the flanks which are not normally visible (Fig. 7). This conspicuous colouring is emphasized by the bird's habit, when in this alarmed state, of swinging its whole body from side to side in a rather jerky fashion. At these times there is a slight sideways jerk of the tail, but this is not very noticeable.

In the Lavender Finch the tail appears proportionally smaller than in the other species and, although it is always conspicuous by virtue of its colour, at no time does it appear to be deliberately moved in a manner which would emphasize its presence. In actual fact, only the two central tail feathers are scarlet, but the others, which are of a brownish colour, are normally concealed by these.

Song

The song of the cock consists simply of a di-syllable call—"see-yu". The first note is fairly high pitched and slides down to a lower, more melodious one. It is sometimes condensed into what sounds like one note and, on other occasions, it is long drawn out. As with other species, the cock usually sings it when the hen is not in view and it is easily mistaken for a call-note. When this song accompanies the display, it is repeated rapidly over and over again.

Other Notes

I have not heard the churring nest-call from this species at present, but, when one bird flies to the nest-box when the other is already there, there is an outburst of quite musical twittering which sounds as though it came from both birds.



FIG. 8.

Display

The cock flies to a perch holding a piece of grass in his bill. He perches very upright with his tail slightly depressed and the feathers of the rump and tail-coverts fluffed out so that the greatest possible area of scarlet is exposed (Fig. 8). He then bobs up and down on the perch in a similar fashion to the two preceding species, accompanying this by a rapid repetition of his song. This would appear to be all that there is to it, though, at the time when I witnessed it, the hen showed no interest.

The white spots on the flanks which are displayed when it is alarmed do not show during the courtship display, being hidden by the wings, which are parted to expose the rump feathers.

SOME FINAL COMMENTS

The displays described here, which are similar in each species, are by no means confined to the Fire-Finches. An account by Dr. G. R. Walker, quoted by Bannerman (1949), of the display of the Orange-cheeked Waxbill (*Estrilda melpoda*) suggests that this species has a precisely similar display, accompanied by a song which differs from its ordinary call-note. Desmond Morris has discussed in detail the courtship display of the Cutthroat Finch (*Amadina fasciata*), in which a similar bobbing movement occurs. He has coined the term "inverted courtsey" to describe this upward thrusting movement and associates this type of display with the frontal pattern of this species.

This might be so in the case of the courtship display of the Bar-breasted Fire-Finch also. On the occasions on which I have seen it display, the hen has been on the floor of the cage or on another perch; the white markings, however, tend to be most profuse at the sides of the breast. In the case of the Senegal Fire-Finch, the display is a lateral one, the cock perching beside the hen and presenting his side view to her, while, in the case of the Lavender Finch, the most prominent feature of the display, the fluffed-up tail-coverts, is only visible from the side or from behind. It would be reasonable to expect that, in a genus such as the Fire-Finches, where the prominent markings—that is to say, the small spots—are on the birds' flanks, the courtship display would tend to emphasize this and would, therefore, tend to be lateral rather than frontal.

The prominence of the rump and tail in the various postures would seem to be a peculiarity of this genus though, until more is known, it is difficult to tell whether or not such markings figure in the postures and displays of related genera; certainly most of the Estridine Waxbills have these parts conspicuously coloured.

I hope to have the opportunity in the future to study other related species and, until then, I would rather be cautious in my comments and conclusions. I would welcome any disagreement on my observations or ideas.

B.—The accompanying sketches are only intended to give some idea of the birds and their attitudes and may err a little in detail and proportion.

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* * *

THE BREEDING RESULTS OF THE TAWNY FROGMOUTH

(*Podargus strigoides*)

By H. A. GERRITS

(Manager of the Wassenaar Zoological Gardens, Holland)

To identify the Tawny Frogmouth scientifically we arrive at the order Podargiformes and descend via the family Podargidæ to the genus *Podargus*. The habitat of the Tawny Frogmouth, sometimes called Tawny-shouldered Frogmouth, comprises nearly the whole of Australia and the island of Tasmania. When we analyse the scientific name *Podargus strigoides* we can at the same time more or less visualize the bird. *Podargus* indicates the genus and *strigoides* from the Greek word “strigos” (= owl) and “oides” from eidos (= like). The Dutch name “uilzwaluw” (= owl-swallow), as the bird is sometimes called in our language, probably comes from this Greek derivation.

Before proceeding to a description of this bird I first want to give an impression of the general appearance of the representatives of the genus *Podargus* and for this I can best quote the really excellent description which Mathews gives in his work *The Birds of Australia*: “Large Podargine birds with large broad bills, long wings, long wedge tails, and short legs and feet. The bill is very broad at the base and triangular in shape, the gape very large, and the whole bill very depressed, the culmen keeled, with a very prominent ridge, and the sides flattened. The upper mandible has a prominent hooked tip, the edges straight and clean cut, not denticulate; the under mandible having the rami narrow and the sides straight, the tip decurved and hollowed to fit the hooked tip of the upper mandible; the interramal space is fully feathered, bristles along the edges pointing outward. Similar bristles occur along the sides of the gape and cover the nostrils projecting forwards into a tuft as far as the end of the bill. The nostrils are completely hidden by bristles and are hollow slits situated near the base of the bill and overhung by a membranous operculum. The wings are long and rounded, the fifth primary being longest, the fourth about equal to the sixth and much longer than the seventh, which exceeds the third, the first being little more than half the length of the fifth. The tail is wedge shaped, almost as long as the wing, the two middle feathers attenuately pointed, and the others less pointed. The feet are small, the tarsus less than the middle toe in length. Three broad scutes can be counted in front, the back being very finely reticulated. The middle toe is long, the outer longer than the inner, which is longer than the hind toe. The claws are long and sharp and mid-toe not pectinated.”

The Frogmouth is usually seen singly or in pairs. The bird mostly

frequents forest-lands and is seldom seen in other regions. It is strictly nocturnal, sleeping in an upright position throughout the day on a branch of a tree. When at rest it simulates the bark of the branch so well that it is often difficult to locate. In daylight the bird is really unperturbable and according to Gould it may be knocked off a branch with sticks or stones. When two birds are sitting together one could shoot one of them without frightening away the other. Such complete immobility is hardly imaginable and even in the Louise Hall of the Wassenaar Zoo, where two specimens were caged and daily thousands of visitors moved before their aviary, they remained undisturbed on their heavy trunk. The immobility of the birds was so striking that in order to avoid the repeated questions of the public we had a notice "This bird is alive" fastened to their aviary.

Its call is a low booming or grunting note like "Oom", repeated twenty or more times. This typical, not very musical, sound droned repeatedly through the Hall towards evening. It was remarkable that, when one bird started to make this sound, the other would join it after three or four calls. Both birds, however, produced this sound with such precise intervals and stopped so simultaneously that it was just as if there was only one bird calling.

Both specimens arrived in the Wassenaar Zoo on 7th April, 1955, imported direct from Australia, and were put into a 24 by 7 by 7 feet aviary of the Louise Hall. In the beginning we had some difficulty with the feeding of our Frogmouths. The birds definitely refused to eat all sorts of insects and beetles and the general condition deteriorated in such a way that I was very pessimistic about the future. During the day the birds maintained the lethargic attitude already mentioned above, which did not even change when we entered their aviary. The birds were continuously in each other's company, sitting closely together with their feathers so intertwined that on passing the aviary they gave the impression of one bird with two heads. Towards evening the birds became more lively, started to move about, gave some sound, and even succeeded in flying with a single slow, absolutely noiseless wing-beat from one perch to another. However, they did not take any food, either during the day or night, which could easily be checked by keeping exact details of the food provided. After two days I therefore started with forced feeding. I made small pellets consisting of minced meat mixed with dried insects and beaten egg-yolk. The feeding had, of course, to take place during the day, and as soon as we opened the beak and put a pellet at the far end of the bill the bird swallowed it.

Each bird consumed three to four of these pellets, the size of a grape, one after the other, after which they definitely refused to take more. If they persisted in the feeding they vomited all the pellets taken, so we had to keep to the number the bird took voluntarily. Towards evening we

tried again to feed the birds by hand and they once more accepted three pellets. This happened for some days in succession and a marked improvement of their body condition was soon apparent. As we kept our feeding times to the minute the birds were very soon accustomed to this routine and became impatient if the feeding was a little later than usual. They even started to give vent to their feelings with their disconsolate "Oom oom" for this neglect of their time-table.

We also tried to feed young mice to the Frogmouths and found that they had such a preference, especially for the very young naked, pink mice, that they even renounced their imperturbability and took this food with great appetite. Once when I tried to drop a mouse on the ground of their aviary between the grass it proved that the seemingly fast-asleep Frogmouths had been well aware that this delicacy had been dropped. With an awkward jump the birds landed on the ground, the little mouse was seized in the strong bill, shaken too and fro with the obvious view of killing it and breaking its bones, and was swallowed. Hereafter—actually five days after their arrival—the feeding problem was solved. The forced feeding was no longer necessary and both birds took sufficient food voluntarily. They still did not like insects, but all young mice and meat pellets which we supplied were duly taken. To be accurate I must add that although the birds ate a little during the day most of the food was taken at night. Therefore we supplied fresh food every morning and evening and their condition became really excellent, so much so that I feared the birds would grow too fat. In order to prevent this real "aviary fault" I stopped mixing the egg yolk with the meat pellets.

Before giving a report of the breeding I first want to give a description of both specimens. To begin with, our Tawny Frogmouths are of different coloration. In the *Podargus strigoides* two colour phases exist, viz. only "grey" males and both "grey" and "red" females. So a "red" Frogmouth of this genus is always a female whereas a "grey" one may be a male or a female.

Colour description of the adult male :—

General colour of the upper surface, including the head, back, wings, and tail, chocolate-brown, mottled and vermiculated with cream-white, black, and grey, which assume the form of bars on the flight-quills and tail-feathers, some of the scapulars much paler than the back; the white pattern coarser and more profuse on the head, the black pattern on the head, back, upper wing-coverts, scapulars, and innermost secondaries take the form of the shaft-lines, many of which are globular or pear-shaped at the tips of the feathers, which are marked with white; flight-quills blackish-brown marked with white on the outer webs, some of the outer ones also marked with hazel-brown, as are also some of the upper wing-coverts, inner webs of flight-quills with speckled bars and mottled with brown at the tips; tail mottled

with grey, brown, and black which assume the form of ill-defined bars ; the feathers at the nostrils and base of the bill disintegrated and hair-like, those on the sides of the forehead and in front of the eye rust-brown ; hinder face and ear-coverts grey intermixed with rufous and a broad streak of black feathers from the gape stretching backwards along the cheeks ; throat and breast grey intermixed with brown, with blackish shaft-streaks to the feathers ; throat and breast cinnamon-brown freckled with white and longitudinally streaked with blackish ; the streaks expanding out on the sides of the breast ; abdomen, under tail-coverts, and sides of the body similar but more coarsely marked, which gives a somewhat paler appearance ; thighs blackish ; under wing-coverts similar to the under surface of flight-quills, which are greyish-brown with whitish mottled bars, lower aspect of tail, grey mottled with brown and pervaded with a golden tinge.

Adult female (red phase) :—

General colour above, chestnut speckled, mottled, spotted, and streaked with white, grey, and black ; the black occupying the middle shaft of the feathers on the head, back, and wings ; on the fore-part of the head it widens out, becoming pear-shaped towards the pale tips ; a broad eyebrow is formed over and behind the eye by the silvery-grey specklings to the feathers ; the black shaft-streaks are narrower on the hind-neck, mantle, and back, outer scapulars paler than the back, becoming dusky on the distal portion, median series like the back, many of the greater series speckled with white ; innermost secondaries cinnamon mottled with grey and brown and with dark shaft-lines to the feathers ; bastard-wing, primary coverts and flight-quills black, marked with white and hazel-brown on the outer-webs and pale mottled bars on the inner-webs, the markings on the secondaries inclining to cinnamon ; rump and upper tail-coverts rather darker than the back ; tail cinnamon-brown with mottled bars of grey and black, more coarsely marked on the lateral feathers, the outermost pair somewhat paler and marked with white on the outer-webs ; the feathers surrounding the nostrils and base of the bill disintegrated and hair-like ; sides of the forehead in front and below the eye chestnut-brown like a patch on the sides of the neck ; cheeks grey ; throat and entire under surface, including the under wing-coverts, pale cinnamon intermixed with white and with black longitudinal shaft streaks ; axillaries pale ochreous ; under-surface of flight-quills greyish-brown with pale mottled bars ; lower part of tail cinnamon-grey with dark mottlings, thighs blackish-brown. Bill light brown, eyes bright yellow, feet light brown (lighter than the bill), gape sulphur yellow.

Now it is well known that the Frogmouth builds its nest in trees or shrubs. The nest itself is an open platform composed of sticks, loosely put together and generally placed on a horizontal forked branch of tree up to 40 feet from the ground. The clutch consists of two or three

eggs, white and rounded, and the breeding season is from August to December.

In view of the birds' nesting habits the conditions of the aviary of our Frogmouths hardly gave an opportunity for nest building.

Although the aviary was quite large for birds of the size of the Frogmouth it lacked the spaciousness which seemed to be required for building a nest. Moreover, there were no trees or shrubs in the aviary. Owing to the early season even the vegetation was not particularly rich and consisted only of grass bordered with small begonias.

I had never witnessed any mating of the birds during the day and during the night I did not dare to disturb the other very precious birds in the Louise Hall, so there was nobody present to observe the behaviour of the Frogmouths at night. Consequently, we were very agreeably surprised when we found an egg in the aviary of the Frogmouths on 17th May, 1955.

As is usual in the Podargidae the male was sitting on the nest; the female sat on a near-by branch and she was as tranquil as on the preceding days. Her interest in the egg seemed to have gone directly after the laying of it.

We immediately placed thin twigs in the aviary, hoping that the birds would build a nest before the second or eventually the third egg would follow. The place of the "nest"—that is to say so far as it deserved this name—was along a wire-netting side of the aviary in the middle of a tuft of begonias which were trodden down by the birds. Hardly had the nest material been put into the aviary when the male Frogmouth directly started (in full daylight) to get to work. In an ingenious way the bird succeeded in shaping the twigs and small branches into a nest and manœuvring the egg into it.

I did not assist the bird for fear of disturbing his efforts and the nest was built around and under the egg without changing the original position of the "nest-hollow" or any damage to the egg. I do not know what caused the birds to start this clutch at this time of the year, which was entirely deviating from their true breeding season, unless it was that the ideal accommodation and temperature of the Louise Hall, together with their diet, had quickened their urge to breed. Plate I shows the male Frogmouth brooding the egg.

I regret that I cannot describe the breeding habits of the Frogmouths in their natural habitat from my own experience. In the Louise Hall, however, I only saw the male sitting on the egg. The female came in the neighbourhood of the nest now and then, but I never saw her sitting on it. Unfortunately there was no second egg laid and as the male kept his position on the nest from the very first day, with only a few hours' interruption for the above-mentioned nest building, I take it for granted that the actual breeding started on 18th May.



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MALE FROGMOUTH BROODING EGG.



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PARENT WITH THREE-DAY-OLD YOUNGSTER.

To face p. 146.



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YOUNG FROGMOUTH BEGGING FOR FOOD.



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YOUNG FROGMOUTH BEING FED BY HAND.

To face p. 147.

On 16th June, 1955, at 13.00 hours, I observed that the egg was hatched and so deduce that the incubation period is thirty days.

During 17th June I could easily observe the youngster because the male had left the nest to eat. A tiny chalk-white little bird lay in the nest and even in this day-old creature the comparatively enormous beak was already striking. Plate II shows the parent with the youngster on the third day.

Much to our regret the feeding of the baby was very unsatisfactory. During the day it got next to nothing and the quantity supplied during the night was beyond our control, though I suppose it did not get much then either.

The large quantities of insects supplied by us were, just as in the beginning, refused by the parents and neither did they feed them to the youngster. As soon as the male left the nest the baby raised its small head with a wide-open bill hungrily into the air (Plate III), meanwhile making rocking movements, but most of the time its efforts were in vain.

Now I must draw attention to the fact that in the month of June thousands of pupils of the elementary and secondary schools visit the Wassenaar Zoo. These visits are very much encouraged by the management with a view to their cultural importance for youth, though under these circumstances we very much regretted the disturbance of the solitude in the Louise Hall, which was so necessary for the Frogmouth youngster. For this noisy crowd was undoubtedly much to blame for the half-hearted feeding of the youngster by its parents.

The very insufficient feeding was, of course, not very favourable for successful growth and in order not to lose the youngster we started feeding by hand on 22nd June. On 23rd June we continued the feeding by hand, giving small bits of a few-days'-old mouse, which were eagerly devoured by the baby (Plate IV). After the second day of feeding by hand a marked improvement of its general condition was visible. The growth was more rapid and little feathers even appeared on the wings and the downy, white little bird gradually changed into greyish, stubby creature.

On 24th June I at last saw the female for a considerable time in the neighbourhood of the nest and I noticed that she fed the youngster. The male also fulfilled his feeding duties more seriously and that day the baby was sufficiently fed by the parents as not to need any feeding by hand.

The 25th June also passed in accordance with our wishes and when we perceived that both parents now alternately fed the baby during the day we were very optimistic about the upbringing of the little Frogmouth by its parents. One can therefore imagine our great disappointment when, in the course of 28th June, after an extraordinarily noisy

and crowded school visit, we found that the male Frogmouth—obviously frightened by the numerous children who passed so closely by its nest (which was disguised by us as much as possible)—had killed the baby by sitting on it. At this we had to give up hope for the time being of breeding the Frogmouth in captivity.

Having learned much by this experience, however, we changed the layout of the aviary by planting a medium-high privet hedge at the front side in order to give the birds a little more privacy and hide them at least a little from the obtrusive glances of the public should another attempt at breeding be made.

Indeed, on the 8th July the birds started anew with building a nest on the same place on the ground. On 13th July the female laid her first egg of the second clutch and again this was limited to only one egg. The following day, 14th July, the male started to incubate, but alas, after some time the egg proved to be clear.

This was the end of the breeding urge of the birds. They did not visit the nest any more and up till now, March, 1956, they have not shown any renewed attempts at breeding.

* * *

THREE SPECIES OF BUSTARD QUAILS NEW TO CAPTIVITY IN SOUTH AUSTRALIA

By ALAN LENDON (Adelaide, S. Australia)

In the January, 1938, issue of *The Foreigner*, there appeared an article written by me on the Quails of Australia. At that time only three of the eight Australian species of Bustard Quails or Hemipodes were known in captivity in this State. Of those, the Painted Quail (*Turnix varia*) and the Little or Button Quail (*T. velox*) are still relatively common aviary birds here, and have been bred on numerous occasions, but the Plain Wanderer or Turkey Quail (*Pedionomus torquatus*) has practically disappeared from aviculture in the past fifteen or twenty years. As far as is known, it has never bred in captivity, although a pair that I presented to the Adelaide Zoo just prior to World War II were on the point of doing so when the male (the only living example that I have seen) was killed by another occupant of their aviary.

The Red-chested Quail (*T. pyrrhothorax*).—In 1953 three birds of this species came into the possession of Mr. R. W. McKechnie. They were obtained from a farmer near Murray Bridge who had frequently obtained young Button Quails during harvesting operations, and who realized that these birds were somewhat different. They are about the same size as the Button Quail, but the back is predominantly

slaty-blue as opposed to the cinnamon of the Button Quail and the chest is a rich rufous colour, particularly bright in the female. A fourth specimen was somewhat surprisingly obtained from Queensland, and the owner thus had two true pairs. One hen laid in the first season, but no nest had been constructed, and the male did not attempt to incubate. By the beginning of 1956 the number had dwindled to a single female without any more eggs having been laid, but fortunately three more birds, making two true pairs once again, have recently been obtained from the same farmer, and hopes are high for the coming breeding season. The colour plate of this bird in Mathews' *Birds of Australia*, vol. i, p. 91, does not adequately convey the slaty colour of the upper surface, and makes the bird look too like its near relative, the Button Quail.

The Red-backed Quail (*T. maculosa*) is also called the Black-backed Quail. Two birds of this species were obtained from Queensland in 1955 by Mr. A. Phillips, and I was privileged to inspect them. They were identical in size and coloration, and both the owner and I came to the conclusion that they were males, as they were not as brightly coloured as the females depicted in plates available. More recently several more examples of this species, including some undoubted females which are larger and extremely brightly coloured, have been obtained by the same aviculturist. This species is about intermediate in size between the Painted Quail and the Button Quail, and the females exhibit a great deal of bright rusty-red colouring. Once again, Mathews' plate (vol. i, p. 79) is not sufficiently highly coloured, and may well represent two males. Seth-Smith (*A.M.*, 1930, p. 18) states that both this and the preceding species have been imported.

The Black-breasted Quail (*T. melanogaster*).—This month (March, 1956) I was delighted to see a true pair of this reputedly very rare bird which had recently come into the possession of Mr. H. J. Hutchinson. They are slightly larger than the Painted Quail and the male is heavily and strikingly marked with black, whereas the female has very little black on the breast feathers. They are a most handsome and attractive species, and it is much to be hoped that they will breed. Mathews' plate (vol. i, p. 81) is an excellent portrayal of a male. This bird is recorded as having been exhibited in the collection of Mr. M. Jacobs, of Geelong, Victoria, before the last war.

All the Hemipodes are fascinating aviary birds, and readers are referred to the articles by D. Seth-Smith (*A.M.*, August, 1905, p. 295) on the breeding of *T. varia* and by the writer (*A.M.*, March, 1938, p. 78) on the breeding of *T. velox*.

NOTES ON THE BREEDING OF CURASSOWS AND GUANS.

By J. CARPENTIER (Curator of Birds, Royal Zoological Society, Antwerp, Belgium)

In the collection of Gallinacei of the Antwerp Zoo there are several South American representatives of this order, viz :—

Razor-billed Curassow, *Mitu mitu* (Lin.).

Salvin's Razor-billed Curassow, *Mitu salvini* Reinhardt.

Sclater's Curassow, *Crax fasciolata* Spix.

Globose Curassow, *Crax globicera* Lin.

Yarrell's Curassow, *Crax carunculata* Tem.

White-eyebrowed Guan, *Penelope superciliaris* Illiger.

Red-breasted Guan, *Penelope pileata* Wagler.

These big, strong birds are fed with grain, seed, all kinds of vegetable green food and fruit, bread, and twice a week some raw meat. They are living in aviaries which are planted with small, low box-trees. It was in these conditions that the Razor-billed Curassow as well as the Red-breasted Guan bred with good results, whereas Globose Curassow and Yarrell's Curassow laid eggs which proved to be infertile.

Last year we had noticed in the group of Razor-billed Curassows that a couple was forming, which tried to chase the other inhabitants of the aviary. Of course we did what was required to satisfy our quarrelsome pair, hoping that the birds, as soon as they were isolated, would start breeding. We did not have to wait very long, and only a few days later we found in this cage a large, rough, white egg, 9 cm. long and 6 cm. wide, and weighing 150 gr. The second egg followed two days afterwards. The clutch of the Curassows generally consists of two eggs, seldom of three. The eggs were laid at random in the cage, and not, as we had hoped, in the nest built on the ground of the cage. On close examination it appeared that the eggs had not been fertilized. We noticed that the birds passed much of their time on the low box-trees adorning the cage, where they tried to collect small sprigs and twigs, straw, etc., with the view to building a nest. The required nesting material was procured, but this proved unsatisfactory as well, for after some twenty days we found a new series of eggs spread over the cage. In the meantime, however, the breeding season was over and winter was approaching.

Needless to say, we were waiting impatiently for the following breeding-season, when we would profit by the experience acquired during the previous one.

When Spring was approaching, a small basket was fixed in the box-

trees and it very quickly became clear that this was a very good idea, because the birds showed great interest in this improvised nest. However, everything did not yet seem to be to their liking, because a new series of two eggs was again laid at random in the cage. More building material was procured ; the nest was extended with leaves and sprigs, and after sixteen days two new eggs were laid, on the right place this time, i.e. in the nest. The hen immediately proved a very good brooder and accomplished her noble task completely by herself, without assistance from the cock. The cock, which spent much of his time in the close neighbourhood of the nest, and even on its border, was an exemplary husband, who left his companion to do quietly as she pleased, which is not always the case with Gallinacei.

After twenty-two days we found broken egg-shells which had been thrown out of the nest, and on the next day we could see two little heads sticking out of the nest. The hen stayed on the nest till the second day after the young hatched, while the cock did his level best to supply hen and young with the required food, which they took greedily from his bill. On the third day the hen left the nest to feed with the cock on the soft food which we had prepared for the baby Curassows ; in the meantime the latter were impatiently, but very cleverly, climbing all over the little box-tree, till their parents joined them and fed them.

Four days after hatching we found the fledglings on the ground. However, we do not know whether they were brought there by their parents, or had taken the leap at their own risk. As the hen still passed the night on the nest, we leaned small branches against the box-tree, so as to enable the young to get back to the nest and to find the necessary rest under their mother's wings.

The young Razor-billed Curassows look like large young pheasants, even slightly larger than the young of the Eared Pheasant or the Mpeyan Pheasant. The back is buffish-brown, the breast is light brown, whereas the abdomen is almost completely white. The wings are dark brown with lighter fringes at arms and coverts. The bill is lightly red-brown at the base ; the remainder is black with a very fine vertical line of a light green yellow on the upper part. Further, the head shows several irregular dark spots, with two dark brown stripes running from the base of the bill down to the neck. The feet are flesh coloured.

The young of the Red-breasted Guan are darker in colour on the back, and have a wide brown band over the cranium, around which run two very thin white lines. Throat and breast are white, the abdomen is coloured buffish-brown. Wings and coverts are dark brown with light buffish-brown coloured fringes. An irregular dark ear-spot adorns the head. The feet are flesh-coloured. The bill is entirely black.

The young of our Red-breasted Guans showed a marked difference in colour, so that we thought that the colour might possibly be sex-influenced. But now that the birds are full-grown it appears that this is not so, as both birds proved to be males.

The young were fed on small seed of all kinds, grass, salad, fruit, mealworms, mixed food prepared for pheasants, and above all with baby-biscuits of which they are very fond even now. Only sporadically they pick their food from the ground ; more than nine-tenths of the time it is offered them by the parents, with a gentleness and application which one would not expect from such big birds. Never in the course of our experience did we see such touching little scenes of parental love in birds.

Some data were noted for the sake of information :—

On 7th July, 1955, first egg.

On 10th July, 1955, second egg.

On 10th August, 1955, young seen.

On 14th September, 1955, bill entirely red.

On 15th October, 1955, plumage entirely black, although the bird had only reached half of the height of the parents.

On 25th December, 1955, a slight compression becomes visible at the root of the upper part of the bill. The birds still take food from the bill of the parents, but of course much less than in earlier stages.

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HYBRIDIZING WITH DOVES AT LIBERTY

By NIGEL P. CAUSTON (Overton, Nr. Basingstoke, Hants, England)

Your readers might be interested to learn of the following account of dove hybridizing with liberty birds ; involving cock Barbary and hen Turtle—the latter being originally encountered as a waif sometime during the previous season.

After a winter of close confinement in wire front and separate cages, placed side by side, the birds mentioned were liberated in early April. This was their first meeting since nursery days in a small garden aviary together, and they were encouraged not to stray too far by regular hand feeding (plain Dari). Their immediate reaction towards each other is not recalled, since these activities took place some years ago. However, by 23rd April, the first of two eggs was clearly visible through a typically dovish platform, positioned some 12 feet high in a slender and isolated may tree growing in an area of garden most used for sitting out (when possible).

In due course, two healthy youngsters appeared, in which the Turtle predominated, and remained in the vicinity having learned to come to hand for feeding with the adult birds. Two more eggs—in the

same nest—followed, but these fell through since by now the flimsy structure had become unsound. Fearing a similar occurrence, the remains were deliberately destroyed, but ere long building operations recommenced in the same fork, despite proximity to seeming numerous and far more secluded breeding sites. Ultimately two more young birds were successfully raised, this time favouring the Barbary sire.

The whole family, now numbering six, spent the remainder of the summer around the neighbourhood, coming in for food when required. However, one early autumn day, the sudden disappearance of Turtle and progeny doubtless indicated that the urge to migrate had developed, and so the father became a lone bird.

With the next return of the Turtles that always visited our suburban garden each year, our attention was aroused by not only a bird unusually tame, but also the presence of one that was singularly pale in its plumage. Court was duly paid to these and others too by our own pet who had survived the winter still at large ! But this season no material advantage ensued. No proof was actually established that our birds had returned, none the less we like to think that they did in view of the foregoing, also that this species is reputed to revisit the ancestral home.

Before closing I would also mention that during the aforementioned events a widower Diamond Dove was also at liberty. When the Barbary's back was turned it was amusing to watch how this tiny mite would materialize upon the scene and pay court to the hen Turtle, who, apparently approving, judging by her coy reactions, actually permitted him to mount her ! In fact the stage had been reached when it was hoped that an even more usual happy event might have ensued after the second weaning ! However, such hopes were suddenly dashed following a battle royal between the two males, when the midget countered most valiantly. But alas, the odds were against him and before any rescue could be effected, the Barbary delivered the *coup de grâce*.

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MUTE SWANS MEMORY

By SYDNEY PORTER (Derby, England)

The following amusing incident may be of some interest to readers if only to show that swans, like elephants, have long memories.

Some friends who live near a quiet and picturesque village not far from Melton Mowbray have a delightful garden through which flows a small river, only a few yards away from the front of the house. My friends are bird-lovers and do their best to encourage the wild birds to make their homes amidst the old gnarled willows and little streams which intersect part of the garden. However, their efforts

are rather neutralized by the housekeeper's stray cats which like both feline and human "strays" are apt to be remarkable for their fecundity ! A few years ago the tables were turned when a couple of birds arrived which soon put the cats in their proper place—a pair of breeding Mute Swans.

This was just the location for the business of reproduction, with its quiet backwaters, tranquil atmosphere, and vast amount of luscious water weeds upon which the swans fed.

The birds chose a site at the bottom of some shallow steps running down to the water's edge for their nest.

The swans, shy at first, eventually became very tame as a result of the encouragement of the housekeeper who fed them on soaked bread. They, learning to expect this, came to the front door for it and if the door was closed and no one about, would knock on the woodwork until someone appeared. If, however, their knocking remained unanswered they would in time go to the back of the house. Sometimes if there was no one about and the kitchen door was open the cob would enter and make himself at home by sitting before the kitchen fire in the midst of a conglomeration of cats.

In the course of time the eggs hatched, the cygnets grew up and finally the family moved away, never to return. Some time later my friends and their housekeeper had gone into Melton Mowbray for the weekly shopping and on passing by some water, possibly the same river which flowed by their house, they saw several swans and stopped to admire them. By this time the swans had recognized them and gave every indication of pleasure at meeting their old hosts.

The whole swan family left the water and surrounded my friends who after stroking their heads and talking to them, moved off to get on with their day's business. The swans were not so eager to say "good-bye", and showed no sign of going back to the river ; instead they formed into a line behind the party and followed until they came to the main streets of the town. (What would I have given to have been there with a camera !) Nothing would deter the birds and they would have entered shops and business establishments if allowed. So persistent did they become and so embarrassing was the situation that my friends had to return to the car park still followed by the birds, pick up their car, and return the next day, when, needless to say, they gave the river a wide berth.

Only those who have encountered Mute Swans on dry land comprehend their huge size and potential strength. Seen sailing along on placid waters one doesn't realize how large they really are.

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ON THE DIFFICULTY OF KEEPING GREBES
AND KINGFISHERS IN CAPTIVITY

By EUGENIO CALLEGARI (Ravenna, Italy)

Few people realize how difficult it is to keep in captivity Grebes, Kingfishers, and other birds which catch their food in water and are therefore in close contact with it. I have visited scores of zoos, interviewed experts, and consulted no end of books, but could not find a satisfactory explanation of the failure to keep the above-mentioned birds in captivity unless they were given live fish to eat and pure water to swim in.

Even Dr. and Frau Heinroth in their masterpiece *Die Vögel Mitteleuropas* had to cope with this difficulty, and came to the conclusion that there was more nutrition in live fish than in dead ones. In publishing this article I run the risk of being rightly judged conceited, the more so as I could not get further specimens in order to test the validity of my opinions.

It is well known that Grebes spend their whole lives in water and only leave it when brooding. I once happened to come across a group of six or seven Little Grebes (*Podiceps r. ruficollis* Pallas) standing on the bank of a canal in a swamp area which, on catching sight of me, jumped into the water and disappeared. Maybe they had come across oily patches and had therefore come on land.

If you put a Grebe into a fish pond and feed it on dead fish, in a few days you will notice that every now and then it comes ashore, and that day by day the emersions are more numerous and more prolonged until, little by little, it avoids water completely. Its plumage loses its impermeability, its feet get sore, and in a short time it dies. The same effects are to be seen in Dippers, though I have never had any personal experience of them. Their feathers, too, lose their natural impermeability and death follows.

In November, 1953, a fisherman who used to eat grilled Grebes gave me a Black-necked Grebe (*Podiceps n. nigricollis*). Wishing to discover the reason for the above-mentioned failures in keeping the birds in captivity, I put it in a tub full of water, which I renewed two or three times a day, and so arranged that the bird could come out of the water at will. I tried to feed it as naturally as I could afford on small fish, crustaceans, tenebrio larvae, and seaweeds, which it systematically refused. I also gave it small feathers of web-footed birds, as a good quantity of this substance is found in the stomachs of Grebes, though so far its function is unknown. As in former cases the bird began to show a dislike for water. I noticed that the dead fish in contact with the surface of the water gave rise to slight iridescence produced by a small quantity of greasy substance. I must add that this

phenomenon was most evident in the Clupeidae, less evident in the Aterinae, and scarcely noticeable in the Cottus species. That might be the explanation of the bird's dislike for water, however small the quantity of oil might be.

I sprinkled the bird with talc and put it in a suitable box for a whole night, firmly persuaded that the talc would remove not only the greasy substances but the oil gland secretion as well. I plunged the bird in the water again at shorter intervals so that it might smear its feathers with its natural oily substance and fed it myself with dead fish well rinsed in running water. I had hit the mark ! In fact water became its favourite element. Seizing the fish with its bill it squeezed it and, rinsing it, often soiled its feathers. I noticed that its lower side parts and breast were the most sensitive but by sprinkling them with talc I soon put them right again. The greater care I took in preventing its feathers coming in contact with the oily substance the longer were its periods of good health. Afterwards I added some small pieces of ox heart to its diet ; this is a food which prevents the inconvenience of greasy secretions, and it got accustomed to it in a short time.

In the spring of 1954, as I had to be away for a while, I left the bird in charge of my mother, who put it in a vessel and fed it regularly by hand on ox heart. It would still seize water insects, more as a pastime than as a staple food. So its condition of health improved greatly and it assumed its wonderful breeding plumage and was reported to have uttered cries and assumed attitudes which proved to be mating manifestations.

In July I looked after it myself. I put it in a fish pond two metres wide by fifty centimetres long and fifty centimetres deep and only gave it ox heart thrown into the water ; the fish diet having proved injurious to its health. In September, back from a trip in Scandinavia, I found the bird out of the water again and showing a dislike for it, just as before. I was greatly surprised and came to the conclusion that ox heart might also secrete oily substances. In fact, after throwing some tiny bits of ox heart into a basin full of water I noticed, on the following day, that there were traces of greasy substances on the surface.

But the remedy was quite easy : a sprinkling of talc on its feathers for one night and a tiny stream of running water removed the greasy substance from the surface of the water. In addition, the food trough was put under the water level not far from the overflow pipe. Ever since there has been no trouble. Fish diet was resumed, but only of fish tail above the anal opening. In the second part of my article I will relate how I arrived at this decision.

My Black-necked Grebe, however, is very docile ; only a few days after its capture it took food out of my hand, and in a short time learned to know the step of the persons who fed it and would call out

to them with its characteristic cries. . Sometimes it seemed to prefer fish and at others ox heart. Its plumage is beautiful and wins the admiration of all who see it. It is a creature far above the average, which is acknowledged even by those who, moved only by a brutish atavistic instinct, keep on destroying some of Nature's most wonderful gems. I must also relate a failure I had with a Little Grebe (*Podiceps r. ruficollis*) kindly given to me by Dr. Alfred Brandolini, which died after twenty days of captivity. I believe the failure was due to my having put it in a pond where a few days before a Puffin (*Fratercula a. arctica*) had died of an infectious disease.

As for Kingfishers (*Alcedo atthis isipida* L.) I will relate three failures in keeping them in captivity of which I hope I have discovered the cause and found out the remedy.

In October, 1954, I happened to catch two Kingfishers and, thinking of the success I had had with the Grebe, I wanted to try the same method with them. I put each in a rather small case, one side of which had been removed and replaced with wire netting, and covered with some canvas to prevent their flapping. Inside I put a small basin, supplied with a thin stream of running water, and a few inches deep I fixed gauze to prevent the bird from knocking its head on the bottom when it dived. As for food—I put in dead fish, shrimps, dragon-flies, and grasshoppers, rare delicacies for them. But a few days later I noticed that one had got wet and during the night it died. I also noticed that the supply of water had not served its purpose, for on looking at the surface from a short distance I detected the iridescent patches produced by greasy substances. But it was not advisable to feed them entirely on ox heart in order to avoid this, as I believe that the expulsion of pellets is a physiological necessity for them.

I was given a third Kingfisher and did my best to find out how to overcome the above-mentioned difficulty, but after two months they both died at a few days' interval on account of my negligence. One of them, sprinkled with talc, got drenched by diving several times to catch its food and died on the following morning ; the other suffered the same fate. I put it in a warmed box after each plunge so that its feathers might dry and get smeared with its natural oil-gland secretions but it stayed there too long and died.

I had lost all hope of a practical solution of the problem : the Kingfisher, before swallowing the fish, presses it with its bill and then knocks it against its perch, squeezing out the greasy substance, which I suppose is the consequence of the putrefaction phenomenon. The bird soils its feathers, either directly by splashes of water or indirectly when preening them with its dirty bill. When I tried to squeeze a fish between my thumb and forefinger I noticed that the iridescent phenomena increased when I pressed the abdomen from the head to

the anal back opening, and diminished almost entirely when I pressed the rest of the body.

Since then I have had no chance of getting a live Kingfisher, but I suppose that a success might be attained by giving the bird the chance of plunging into a basin full of running water without touching the bottom. The perch against which it knocks its food before swallowing it may perhaps be the cause of its getting dirty. The outlet should be as large as possible but in order to prevent the food being washed away a large meshed wire net should be fixed to it. It is important that this net should not keep back the greasy substances accumulated on the surface of the water as these were the cause of my unsuccessful experiments.

* * *

BREEDING MANED GEESE

(*Chenonetta jubata*)

By J. C. LAIDLEY (Perth, Scotland)

Although Maned Geese are by no means a rare species I believe it is previous to the start of the last war that they were last bred here ; so an account of their doing so now might interest. I acquired some wild-caught birds five to six years ago. I had two pairs but shortly after getting them one male died. During the last two years they showed interest in the nest-boxes but no eggs were laid. The odd female was kept away from the remaining pair both by the duck and drake and it was interesting to see that she, realizing the relationship, tried her best to pair with a male Carolina. This relationship is very obvious when one compares the young Wood Duck or Carolina to the young Maned for the first few days after hatching. When this spring I saw the unpaired Maned going a lot in and out of a nest-box I was disappointed to see the true pair were taking no interest. The unpaired duck laid one egg and a week after a second egg. These I was sure would be infertile, but after keeping them ten days I did set them and have two well-on young from them. Three weeks later the female of the true pair laid two eggs in a nest-box where a Mandarin was laying, causing much fighting. She moved to another, and fortunately, an untenanted box and laid her third egg ; this was scraped out by a bantam in search of a nesting site and the egg was cracked. She, however, laid a fourth egg and then gave up. As usual, accidents happen and the bantam sitting on her eggs proved not too good a sitter and I got one egg out of the nest, and, to cut a long story, I got two more young Maned and all four are doing well. Incubation was twenty-eight days. For the starting feeds I have been feeding finely chopped grass and bread and milk, brown bread. At about a week old they were grazing freely.

The first two Maned, hatched on 15th May, showed flight feathers and shoulder feathers with flanks and underparts feathered by 10th June and at this date (16th June), are practically full feathered. Sex is now visible in that one, the male, shows black on rump whereas the other, a female, shows grey on rump. The second lot, hatched on 26th May, are now showing flank feathers.

* * *

LONDON ZOO NOTES

By J. J. YEALLAND

The most notable event of the past two months was the arrival during May of some birds collected by the Gough Island Scientific Survey. The consignment, flown from Cape Town, consisted of twelve Gough Island Coots (*Porphyriornis comeri*), ten Gough Island Buntings (*Rowettia goughensis*), both species being new to the Collection, twelve Rock-hopper Penguins, and six Southern or Antarctic Skuas.

The nearly related Tristan Coot (*P. nesiotis*), which is now extinct, was exhibited in Regent's Park many years ago. The birds would more properly be called Moorhens, and indeed they are very like our native Moorhens and have not the lobed toes of the Coot.

The Buntings remind one of the South American Cow-birds in general appearance. They and the Coots are not at all wild or nervous.

Other arrivals never before exhibited here are a Chinese Koel (*Eudynamys scolopaceus chinensis*) and a Japanese Red-tailed Shrike (*Lanius cristatus superciliosus*), presented together with two Bare-footed Scops Owls (*Otus bakkamæna glabripes*), a Grey Thrush (*Turdus cardis*), two Blue Flycatchers (*Cyanoptila cyanomelæna*), and two Narcissus Flycatchers (*Xanthopygia narcissina*) by Dr. K. C. Searle, now living in Hong Kong.

Mrs. Daphne Seggar brought a number of birds from British Guiana—two Black-headed Caiques, twelve Guiana Parrotlets, two Glossy Cow-birds, two Yellow-headed Marsh Birds, eight Black-throated Cardinals, three Violet Tanagers, and a Great Green Cacique. She also brought two Maroon Tanagers, presented by the Paignton Zoological and Botanical Gardens, and sent by Mr. K. Smith, who was collecting in Guiana at the time.

Two Virginian Cardinals, two Red-crested Cardinals, and two Superb Tanagers have been presented by Mr. George Newmark. A Great Condor was received in exchange and another deposited. A Melodious Jay-Thrush and a Black-throated Mango Humming-bird have also been received in exchange.

After a number of unsuccessful attempts at nesting, a pair of Sierra Leone Green Pigeons (*Vinago calva sharpei*) have reared a fine young one, which may be the first to be bred in captivity.

The pair of Snowy Owls are again nesting and the Great Eagle-Owls and Spotted Eagle-Owls nested unsuccessfully earlier in the spring.

The King Penguins are incubating an egg and there are several young Gulls. The Gannets nested but their egg was infertile. There are various young pheasants and a family of five Common Peafowl ; also four Upland goslings and some Red-crested Pochards.

The Choughs nested again, but failed to hatch their fertile eggs. Green-winged Kings that have been at the Parrot House since 1945 have two young ones ; a Swainson's \times Red-collared Lorikeet has been reared and the Quaker Parrakeets are breeding. Violet-necked Lories nested but did not rear their young. The Satin Bower-birds have built two nests.

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BRITISH AVICULTURISTS' CLUB

Meetings and dinners during the 1956-57 session have been arranged for the following dates :—

26th September, 1956.

27th November, 1956.

9th January, 1957.

13th March, 1957.

8th May, 1957.

ARTHUR A. PRESTWICH,
Hon. Secretary.

* * *

NEWS AND VIEWS

Herbert Fooks has resigned his position as Bird-keeper of the Central Royal Parks, London, on being appointed Game Warden to the Forest Commission.

* * *

It is with great regret that we have to announce the death, on 29th May, of Monsieur Willy Friling. The interesting collection of birds on his estate at Brasschaat, which many members of the Society have enjoyed visiting, will, however, be maintained by his daughter Mrs. Henry Martin-Friling.

* * *

A. J. Woods, Head Keeper, Bird House, London Zoo, has retired after thirty-three years in the Gardens. Known to very many of our members for his ever-willing help and cheerful courtesy, they will wish him well in his retirement and success in his farming activities in Norfolk.

* * *

The 1956 breeding season will probably be long remembered by parrakeet breeders on account of the unprecedented number of infertile eggs and young dead in shell. One very prominent breeder reports that of seventeen Bourke eggs no less than fourteen contained young dead in shell, two were infertile, and only one hatched. Ring-necks were just as bad ; nine eggs had young dead in shell, and seven were possibly lutinos !

* * *

Breeding reports : Raymond Sawyer, Roulrouls hatched two young ; one died at eight days and the other at seventeen. Claude Payne, one Derbyan Parrakeet flying ; Red-collared Lorikeets with further young in the nest. Sir Crawford McCullagh, Green-winged King Parrakeets with two young flying. R. G. Kirkham, Hooded Parrakeets sitting on five eggs. E. N. T. Vane, blue Ringnecks allowed their three young to die at three weeks. Kenneth Russell, Cockatiels, seven young now fledging from one pair ; Red-rumps, five reared ; Ring-necks, two lutino from one pair, and three split-lutino from another.

* * *

Dr. S. B. Kendall writes of his Plumheads : " I have lost a lovely brood (four hatched), five eggs ; and have (nearly) reared but one from the second pair. I have *slaved* for them, and during the past three seasons must have had about twenty fertile eggs and have reared two. They go to nest like Barbary Doves and incubate like leeches. They are highly fertile and their young *bellow* for a week or two ; then they smell horribly ! I believe they need rearing in a warm room—none of this good clean air and nice fresh rain nonsense."

The late Duke of Bedford once stated that " They are, in my experience, the hardest of all Parrakeets to rear to healthy maturity ". And this is indeed confirmed by almost all who have tried to breed this very lovely parrakeet.

* * *

Blue Masked Lovebirds. In the interest of accuracy attention should perhaps be drawn to a misapprehension regarding the breeding of the first blues in the United States. The progenitors of the multitude now in the States were *not* of English origin.

The very first blues bred in captivity were reared at the London Zoo in 1931, and following years. None of these, as far as can be traced, was ever sent to California. Actually it was hardly necessary, as the first blue made a very unexpected appearance in 1932 in the aviaries of R. C. Cross, of Pomona, who eventually bred quite a number.

Mrs. Flowers had blues appear among her normal coloured birds early in 1935 ; and in the same year the late F. H. Rudkin, later to

breed many hundreds, had blues appear quite independently in no less than three separate aviaries—all without any aid from him. In fact, he says : “ I do not wish to claim any honour as the breeder of these *blue* Masked Lovebirds, as they evolved of their own accord.”

* * *

A contributor to the last number of the Magazine says that in Australia the vernacular name of *Neophema chrysogaster* has been varied from Orange-bellied to Orange-breasted.

It is certainly true that some writers, notably Leach, Barrett, and Cayley, refer to this Parrakeet as the Orange-breasted—Cayley, however, qualifies it by saying “ more commonly called Orange-bellied Grass-Parrot ”—but its use appears to be far from general.

Latham first described this Parrakeet as the Orange-bellied Parrot in 1787, and three years later gave it its present specific name which is, of course, a compound of two Greek words meaning “ gold ” and “ belly ”. Since then it has almost invariably been known to all intimately connected with Australian ornithology—especially by such great authorities as Gould and Mathews—as the Orange-bellied.

Dr. Alan Lendon, one of the two greatest Australian aviculturists, calls it the Orange-bellied, with Orange-breasted as a synonym. It is to be hoped that any aviculturist, thinking in the future to refer to it, will bear this in mind and follow Dr. Lendon's example in calling it by its correct name, Orange-bellied.

* * *

Round the Zoos.

New York. Arrivals—a Hawk Owl, acquired from the Edmonton Zoological Society, Canada, and a Pileated Woodpecker ♀, both species new to the Collection ; one Inca Tern, the first for twenty-five years ; a pair of Golden-eyed Ducks, hand-reared by an aviculturist in Pennsylvania from eggs collected in Canada, the first exhibited for forty-four years ; two Hooded Vultures.

Philadelphia. Arrivals, a pair of Inca Terns, from the rocky shores and innumerable islets from southern Ecuador to Chile. Levaillant's Barbets continue to rear two or three young every year. The pair of Cayenne Wood Rails have successfully reared four young. A pair of second generation Australian Silver Gulls have hatched their single egg and the young one has been reared.

San Diego. Earlier in the year the research ships *Baird* and *Horizon* visited some of the Galapagos Islands. Amongst the birds brought back to the Zoo were Flightless Cormorants, Galapagos Penguins, and Blue-footed Boobies.

A. A. P.

CANDIDATES FOR ELECTION

- G. ANDERDON, Henlade House, Taunton, Somerset. Proposed by Miss K. Bonner.
- RAE V. ANDERSON, 4918 N. Ryland Avenue, Temple City, Calif., U.S.A. Proposed by A. A. Prestwich.
- R. ARMSTRONG, 10 Church Avenue, Buranda, Brisbane, Queensland, Australia. Proposed by A. A. Prestwich.
- Rev. RONALD G. AYLWARD, 370 Commercial Road, London, E.1. Proposed by J. J. Yealland.
- ROBERT BIRD, 60 McKenzie Street, Leichhardt, N.S.W., Australia. Proposed by Miss K. Bonner.
- W. H. BOUTS, Biesterweg 84, Eidhoven, Holland. Proposed by Miss K. Bonner.
- J. H. BRIANT, 317 Stone Road, Stafford. Proposed by J. Gray.
- N. U. BUONACCORSO, 25 Viale Machiavelli, Rosselli Del Turco, Firenze, Italy. Proposed by A. A. Prestwich.
- R. S. CLARK, 64 Skene Street, Shepparton, Victoria, Australia. Proposed by A. A. Prestwich.
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- Rev. ROBERT H. GATES, 370 Commercial Road, London, E.1. Proposed by J. J. Yealland.
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- Professor OLIVER GRISWOLD, 4273 Ingraham Highway, Miami 33, Florida, U.S.A. Proposed by A. H. Isenberg.
- JAMES K. GUTHRIE, The Sun Company, San Bernardino, Calif., U.S.A. Proposed by A. H. Isenberg.
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- P. HUGHES, Furneaux Pelham Hall, Buntingford, Herts. Proposed by A. A. Prestwich.
- IAN V. HYNDMAN, 353 Lower Heidelberg Road, East Ivanhoe N.21, Melbourne, Victoria, Australia. Proposed by A. A. Prestwich.
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- P. A. LINDSAY, "Glendene," Surig Road, Canvey Island, Essex. Proposed by Miss K. Bonner.
- B. F. MILFORD, 2 Fairway Avenue, Boreham Wood, Herts. Proposed by Miss K. Bonner.
- Rev. Father MAX E. MURPHY, The Presbytery, Chaguanas, Trinidad, B.W.I. Proposed by Dr. G. A. Allen.
- ROBERT W. McMEEKIN, Tates Creek Road, Lexington, Ky., U.S.A. Proposed by A. H. Isenberg.
- G. H. NEWMARK, Staff, H.M. Prison, Johore Bahru, Malaya. Proposed by J. J. YEALLAND.
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- EDGAR R. PETTER, 9 Short Street, Harden, N.S.W., Australia. Proposed by A. A. Prestwich.
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D. RITCHIE, 66 Boronia Road, Boronia, Victoria, Australia. Proposed by
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JOHN TAYLOR, JR., 213 Arundel Street, Landport, Portsmouth, Hants. Proposed
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R. TILLEY, 45 Rue Calamine, Stembert, Verviers, Belgium. Proposed by Miss
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R. J. TYRRELL, 17 Milton Street, Roslyn, Palmerston North, New Zealand.
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Proposed by Miss K. Bonner.

Miss M. H. VERITY, 364 Selby Road, Whitkirk, nr. Leeds, Yorks. Proposed by
Miss K. Bonner.

LIM KOON WAH, P.O. Box 1405, Singapore, Malaya. Proposed by A. A. Prestwich.

R. G. WEATHERILL, The Queen's Head Hotel, Charing, Kent. Proposed by B. M.
Killick.

NEW MEMBERS

The twenty-five Candidates for Election in the May-June, 1956, number of the
AVICULTURAL MAGAZINE were duly elected members of the Society.

READMITTED

JOHN LESLIE, 34 Amroth Avenue, Toronto 13, Ontario, Canada.

CHANGES OF ADDRESS

A. D. CAMPEY, B.E.M., to "Northlands," Hull Bridge Road, Beverley, Yorks.

Professor W. C. DILGER, to Laboratory of Ornithology, Cornell University, Ithaca,
New York, U.S.A.

H. A. FOOKS, to Grizedale Lodge, Hawkshead, by Ambleside, Westmorland.

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D. M. HENRY
1956

GREEN-WINGED KING PARRAKEETS.

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AND THE AVICULTURAL SOCIETY OF AMERICA

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SEPTEMBER—OCTOBER, 1956

GREEN-WINGED KING PARRAKEET

Alisterus chloropterus chloropterus (Ramsay)

By A. A. PRESTWICH (Southgate, England)

DISTRIBUTION

South-eastern New Guinea west to the Sattelberg on the north and to the Arao River on the south (Peters).

NARRATIVE

On 30th September, 1878, E. P. Ramsay, Curator of the Australian Museum, Sydney, read a paper "Contributions to the Zoology of New Guinea" before the Linnean Society of New South Wales. Under the name *Aprosmictus chloropterus* he described as new a species obtained by Kendal Broadbent in the mountain district, near the Goldie River, about forty miles from Port Moresby.

Then on 20th March, 1879, R. Bowdler Sharpe (1879) read a paper "Contributions to the Ornithology of New Guinea" before the Linnean Society. He described a new parrakeet and named it *Aprosmictus broadbenti* after the collector. Very shortly after he received a copy of Ramsay's paper and consequently his specific name had to be suppressed. Bowdler Sharpe was justifiably annoyed because Broadbent's collection had been purchased by the British Museum with a distinct understanding that it was a direct consignment to England, and that no portion of it had been distributed elsewhere. But obviously the novelties described by Ramsay were the result of Broadbent's exertions. As Bowdler Sharpe (1879a) wrote: "It is very much to be regretted that a new species cannot come from such an out-of-the-way place as South-eastern New Guinea without being burdened at once with useless synonyms."

IN CAPTIVITY

Little further, apart from occasional references to specimens at

Tring, was heard of this parrakeet until 18th January, 1909, when the Zoological Society of London purchased three *Aprosmictus chloropterus*. These were, of course, listed as new to the Collection. Seth-Smith (1926) tells us that they were brought by Walter Goodfellow and that they lived for several years in the Regent's Park Gardens.

When, on 19th November, 1925, Walter Goodfellow arrived in London from a collecting expedition to New Guinea, he brought with him many superb birds. There was a single Green-winged King, said to be the first living example to reach Europe—this bird went to Foxwarren Park and nothing further is known about it. One rather wonders why Goodfellow did not remember, or professed not to remember, his importation of some seventeen years previous: also why no one else appears to have recalled the fact.

Then, in July, 1933, F. W. Shaw Mayer brought back five. Three of these went to Primley Hill and two to Foxwarren Park. Mr. Ezra's birds were believed to be a pair but the "hen" eventually turned out to be a cock. The elder bird died in 1936 and the younger in 1953. Kenneth Smith kindly informs me that one of the Primley birds is still alive.

Shaw Mayer brought two birds in 1936 that went to Foxwarren Park, and six in 1937 for the late Duke of Bedford. The former are the late Mr. Ezra's famous breeding pair about which more anon. The Duke's birds were an adult cock and five immature birds—four of these moulted out cocks. The following year the sixth, mated to the adult cock, showed some interest in her nest but got no further, probably because the cock was not as much in breeding condition as he might have been.

In 1945, after more than nine years, Mr. Ezra's pair went to nest and succeeded in rearing a young one. In answer to my inquiry, A. P. Shearing, the Curator of Birds at Foxwarren Park, kindly informed me that the following results had been obtained:—

- 1945, one young reared.
- 1951, one young reared.
- 1953, one young reared.
- 1954, two young reared.
- 1955, one young reared.

All six young are still alive. The 1945 bird is a male and is paired to the 1951 female, but they have not made any attempt to nest. When the late Mr. Ezra's collection was dispersed in November, 1955, all eight were secured by Sir Crawford McCullagh, Bart., and went to his aviaries at Belfast Lough, Northern Ireland.

The only other successes are to the credit of the London Zoo: 1949, one; 1952, one, died from concussion soon after leaving the

nest ; 1953, one hatched but disappeared when well-feathered ; 1954, one reared ; 1955, two reared. This breeding pair was purchased in May, 1945, from J. Spedan Lewis, and had, I believe, originally been in the possession of the Duke of Bedford.

In 1949 E. N. T. Vane bred hybrids, Green-winged King \times King Parrakeet (*Alisterus scapularis scapularis*), one reared of two hatched. In 1950 they were double-brooded ; two reared in the first nest and two in the second—one of the latter, however, soon died as the result of injuries to feet and beak sustained in an attack by a pair of Amazons in an adjoining flight. The male parent originated from the Duke of Bedford. Several of these hybrids are still alive—two with Sir Crawford McCullagh, Bart., and one with Mrs. G. T. Clark.

The Duke of Bedford (1929) suggests that one reason this magnificent parrakeet is so rare in aviculture is "the fact that native trappers stupidly mistake it for a Lory and allow it no seed or grain, with the result that it quickly dies of malnutrition".

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Additional note.—1956, Sir Crawford McCullagh, two reared ; London Zoo, two reared.

A. A. P.

* * *

TANAGERS OF THE WESTERN U.S.A.

By NICHOLAS GRAVEM, JR. (Mill Valley, California, U.S.A.)

I read with great interest Mr. D. M. Reid-Henry's article (*AVICULTURAL MAGAZINE*, Vol. 62, No. 3) differentiating between the two Scarlet Tanagers : *Piranga erythromelas* of eastern North America and *Ramphocelus brasilius* of eastern South America.

I fear that the author is not entirely correct in assuming that the majority of American aviculturists well understand this situation ; however (and fortunately), there should be no confusion in the minds of those who have now read his concise explanation. It seems that none of the more popular non-technical books on the subject treat his distinction between the two Scarlet Tanagers, and generally omit entirely our North American bird. Probably the prevalence, as aviary

birds, of *Ramphocelus brasilius* is due to the strict protection enjoyed by our northern Scarlet Tanager; the few of the latter reaching Europe probably being trapped south of our border.

We have, over here, several others of the Family Thraupidæ that I believe are little known as aviary birds in Britain, or elsewhere, for that matter. Like *P. erythromelas*, they are strictly protected (and from American aviculturists, generally speaking, as well). We have no scheme with regard to keeping close-rung native birds, as in Great Britain, but governmental permit may in some cases be obtained.

A member of this family that I personally believe vies with the beauty of the Scarlet is our Western Tanager (*P. ludoviciana*). This bird is basically yellow with a crimson face; black back, wings, and tail; yellow wing-bars; lighter grey bill and darker grey feet. It is slightly smaller than our Scarlet. Adult hens are greenish-yellow above and drab yellow below. This attractive Tanager is generally found in our more mountainous regions, except during its spring and autumn migration when it occurs throughout the lowlands. It has been accused by orchardists of damaging fruit, particularly cherries, and sometimes goes by the name of "Fruit-eating Finch". Their nesting habits are similar to those of the Scarlet; a rather loose nest on a horizontal limb, and three to five bluish eggs spotted with light reddish-brown.

The Cooper's Summer Tanager (*P. rubra cooperi*), another bird of the western U.S.A., is predominantly red; not the vivid scarlet as in *P. erythromelas* and *Ramphocelus brasilius*, but more of a rose-red. However, this rose-red extends over the entire plumage with the exception of the wings which appear to be somewhat washed with brown. Hens, as can be expected, are drab olive-yellow. Unlike the Western Tanager, the Cooper's prefers the willows of the river-bottoms and is quite abundant along our Colorado River during spring and summer.

A bird very similar to the above is the Hepatic Tanager (*P. flava hepatica*), but, as the name suggests, it is of a darker shade of red, particularly on the back. It also has a brownish ear-patch and quite dark bill; otherwise very similar to *P. rubra cooperi*. This Tanager is at home in the higher forests.

I am sure these three species would be admirable aviary inmates, and it is unfortunate that they are not available to aviculturists. The same sentiments apply to a host of other birds native to western U.S.A. For example, in his excellent book *Foreign Bird Keeping*, Mr. Boosey praises the merits of our Rose-breasted Grosbeak of the east. This brings to mind our western U.S.A. counterpart of the Rose-breasted, the Black-headed Grosbeak (*Zamelodia melanocephala*). In this bird the rose of the breast is replaced by cinnamon; and it is

an equally fine songster. I particularly think of this handsome Grosbeak at this time of year because of its prevalence about our summerhouse. I am sure this bird would make a wonderful aviary subject.

American aviarists cannot, generally, keep native birds such as these ; but, fortunately, some of us live in neighbourhoods where it is possible to observe them in nature. But, does this satisfy the desire to try to breed them in captivity under controlled conditions ?

* * *

BREEDING OF THE EVENING GROSBEAK

(*Hesperiphona vespertina*)

By C. M. PAYNE (Barford, Warwick, England)

Many years ago, prior to the last war, I was privileged to see exhibited at one of the many cage-bird shows, a pair of Evening Grosbeaks in excellent condition and simply glowing with health. They took first prize and, if I remember rightly, also the special prize for the best foreign hardbill. The memory stayed quite fresh with me, despite the upheaval of the war and the passage of time which none can avoid, and I was therefore particularly overjoyed when, during 1954, two pairs were presented to me by a very good friend. As they arrived in the autumn I put the birds into my bird room for the rest of that year. Early in 1955 the two hen birds died and this caused me much sorrow, primarily because I thought replacements would be difficult, but also because I hate to lose any bird. I cannot quite ignore my conscience, which reminds me from time to time that I have robbed a living jewel of its freedom and must therefore give it the very best service I can. However, at about that time, my friend Raymond Sawyer had an odd hen which he gladly exchanged for one of my remaining cocks. This was a propitious exchange because during the present season this hen has nested and produced two young Grosbeaks which are now, at the time of writing, self-supporting. Here is the story of probably the first successful breeding of the Evening Grosbeak in this country.

The pair of Evening Grosbeaks were housed in an outside aviary, about 15 feet square, with a shelter of reasonable size attached. This aviary contains the remains of a large apple tree and other shrubs, in particular *Lonicera nitida*, a very useful evergreen shrub, which is liked by many birds for nesting purposes. I did not anticipate that the Evening Grosbeaks would take to this shrub, as all the authorities which I could consult made it plain that in the wild state Evening Grosbeaks nest in the very tops of tall trees, and in any event not less than 20 feet from the ground. How many aviculturists can

offer that height? However, I am a firm believer that if one can only get the birds into a super-fit condition they will attempt to breed and will accustom themselves to strange surroundings.

About this time a pair of Wattled Starlings were busy constructing a bulky nest in a box bush; or rather they were constructing and demolishing their bulky nest in alternate weeks. I was rather anticipating that the Starlings would be the first to lay, but one day during the tour of inspection of the aviaries I saw the hen Grosbeak extract a twig from the Starlings' nest and fly swiftly about the aviary with it in her beak. I watched intently hoping that I should find a partly constructed nest in some part of the aviary; but the bird did not deposit the twig in any spot, she merely allowed it, in due course, to fall to the ground where it was instantly seized by the Starlings, who once again added it to their nest. By the way, Wattled Starlings take the place of scavengers, and add every particle of green food and discarded stalks to their nest, in fact they spring-clean the aviary each and every day. For some days I watched the hen Grosbeak repeat the performance with a bent or twig, but no attempt was made to make a nest. I then searched the garden for an old Blackbird's nest which I placed, for want of a better place, in a *Lonicera nitida* bush about 15 inches from the ground. I intended later to construct a wire-netting shelf camouflaged with brush-wood in the highest part of the aviary, but almost before my back was turned the hen Grosbeak had inspected the nest and, apparently deciding that here was the answer to her housing problem, added a bent or two and next day laid an egg, which was followed by three others on consecutive days. The eggs were similar to the eggs of a Greenfinch although much larger, a pale clear ground with minute spots on the larger end. I did not actually measure the eggs for fear of disturbing the birds. The hen sat steadily after the first egg, and after twelve days the first young was seen, followed by three others on consecutive days. The last youngster was of course much smaller than the other three and was soon lost. The three survivors grew well on the mealworms and gentles which were (after passing through a thorough mastication) liberally fed by the hen.

For the first few days no other food was fed so far as I could tell. Later, as the young birds grew, a quantity of hemp in particular, together with sunflower, soaked oats, and mixed seeds were taken and also a little sweet apple and groundsel. The old Blackbird's nest was hard put to it to contain the youngsters as they grew, and as they grew so did my fears that the youngsters would be precipitously discharged on to the ground, so preventive methods of propping the nest were resorted to. This proved quite successful and the nest held. On the 20th day of July, just eighteen days after hatching, the first young Evening Grosbeak left the parental home.

The Evening Grosbeak is one of the largest of the sparrows, with a

large typical grosbeak bill. In size it is somewhat smaller than the English Hawfinch. It is covered in broad masses of lemon yellow, with black wings, tail and crown, the secondaries and tertiaries are largely white. The cock has a bright yellow bar on the forehead. The female Evening Grosbeak is much duller with no bright yellow on the forehead, and with an ashy wash all over ; the secondaries and tertiaries are not wholly white as in the cock, but broken.

These birds are found in Central and Western North America, where they breed in the northern coniferous forests from Western Ontario, westward, and along the mountains to New Mexico. In winter they migrate south. The nest is made of small twigs and lined with bark, hair, and rootlets. As the favourite food of the Evening Grosbeak in North America is the seed of the Manitoba maple, left hanging on the trees, it is considered to do little harm to agriculture and in fact may do quite a bit of good. It is also extremely fond of the seeds from old rotten apples which are also left hanging on the trees through the winter.

The three young birds which left the nest were, I believe, two cocks and one hen. The one hen had a rather crippled foot and was from the first unable to perch properly, whereas the other two were both strong on the wing and were able to perch without difficulty. A few days after leaving the nest, my aviary attendant, Mr. Beck, found the crippled bird dead and we were left with the two young cocks. They continued to prosper and after four weeks were seen to be eating both the soaked and hard seeds. It is interesting to note that as soon as they became self-supporting, gentles and mealworms were ignored, although they did take a little fruit.

The birds on leaving the nest were coloured like the hen, but the two young fully reared have wings like the cock ; hence the supposition that they are young cock birds. In fact one, the elder, already has a patch or two of lemon yellow on the sides and thighs.

A surprising fact was the absolute tameness both in the nest and since flying, quite unlike the nervousness shown by similar British finches.

During the courtship the hen bird, as I have already stated, carried twigs and bents about the aviary followed closely by the cock bird, with crest erect and wings down. Mating was not witnessed. The cock bird took little interest in the nest although a few quiet sibilant chirrupings were given if one approached the nest too closely. He did not share the incubation, which was solely the responsibility of the hen, as in fact was the rearing. The cock only fed the hen on occasions with a morsel of chewed up mealworm.

The old birds are not aggressive in any way and the family are living at peace with the other occupants of the aviary. The Starlings before referred to, a pair of Barraband's Parakeets, an odd Plum-head cock bird, and three Red-faced Lovebirds.

As described, C. M. Payne has bred the Evening Grosbeak (*Hesperiphona vespertina*). It is believed that this may be a first success. Any member or reader knowing of a previous breeding of this species in Great Britain or Northern Ireland is requested to communicate at once with the Hon. Secretary.

* * *

A FEW REFLECTIONS ON BIRDS' WAYS AND NATURES

By E. B. TANNER (Finchley, London, England)
(Formerly Overseer of Birds, London Zoo)

When considering ways of keeping small birds (or large ones, and mammals, too), I do think it helps to include a certain amount of psychology in one's calculations. Not, of course, the kind of psychology we hear so much about these days in its application to the human miscreant, which is really anything but psychology. I mean an attempt to see things as far as possible through the eyes and senses of the bird with its instinct gained by age-old experience, and to identify oneself with it. Perhaps I shall not be very successful in trying to explain this point of view, but I will do my best. There are, of course, many opinions as to the methods to adopt in keeping birds at their best, and quite a number of them are correct, judging by their owner's experience, with regard to condition and longevity. Others, again, seem to flourish although there really seems to be no reason why they should, under well-meant but misdirected management; for instance, a parrot which had helped itself at will from a box of liqueur chocolates over a period of years. Perhaps, however, such instances are on a par with the long-lived Okapi at the London Zoo. The late Mr. R. I. Pocock, in conversation ascribed its longevity to the fact that probably its digestive organs had undergone a transformation enabling it to thrive for a long time on the very different diet it was able to receive here, compared with its natural one. However, it would be very risky deliberately to try out such an experiment on small birds without a fatality occurring, and one can only look upon these unusual instances as fortunate accidents. One parallel can be seen though amongst birds which are normally rather difficult, as one occasionally has one which breaks all records for longevity for such a species, although treated no differently to the others. Reverting to the question of birds' welfare in general—suppose we take the vexed question of heating. At times I have been told about very small birds, Cordon-bleus, for instance, hopping about in the snow, very well and happy, although I have not received subsequent information. If one considers, though, how near these

small birds, compared to larger ones, have their vital organs to the surface, it would seem that these examples must be lucky survivors. Large birds, of course, from whatever part of the world they come, especially if thickly feathered, such as touracous and pigeons, are usually much more able to withstand hard weather, but even they have years added to their lives if they are supplied with some comfort. By heat I do not mean what is known as coddling, 85 or 90 degrees, although this can be very useful in cases of illness, providing one takes care gradually to accustom the birds to a lower temperature afterwards. I suggest a moderate heat, such as one in which one could sit and read in comfort without extra clothing. Feathers are excellent non-conductors of heat, but they are not very thick on a small bird, and too often we forget that it cannot don extra clothing such as pullovers and overcoats, as we can. I have often heard people, wrapped up to the eyes, entering the Bird House on a cold day remark upon the heat. They, of course, forget that they are dressed to suit the outside temperature, and that it is the contrast which they feel, but that the birds are in the same covering the whole twenty-four hours. We know many wild birds, apart from tropical forms, have to encounter extreme cold at times, but that is a period in which they are at a low ebb, and not the time of boundless health and procreation which follows with the fine weather. Necessary as it is in a virgin country, for which Nature's scheme was evolved, we hardly want our individual birds to be subjected to rigours to reduce their surplus numbers, and therefore I suggest that attempts to harden them unduly can only lead to increased fatalities. They may withstand spartan treatment for quite a time, but there always comes a day when, for some reason, they are below par and then, in common parlance, "they have had it." There is no possibility of saving them. It is strange the effect a sharp frost will have upon many small birds, even in a heated room. When one can sense a frost outside, without actually feeling cold, it would seem that this can be enough to cause chill in the abdomen, one of the birds' worst enemies. I have noticed many cases of enteritis after such a period. Indeed, I think the greater proportion of enteritis cases are due to cold upsetting the digestive organs, rather than a food poisoning. We know the effect of chill upon us, so how much more likely it is to upset a small creature which is so allergic to the smell of paint or to fumes of any kind. I would stress again that I mean a comfortable warmth, say 65 degrees, for small birds, especially at night when they are still, not a hot-house temperature all the time.

It is always rather unaccountable to me, why a given temperature seems so much warmer in a small compartment than in a large one. Maybe absence of moving air in the smaller place accounts for it, but I should certainly plump for a higher temperature, rather than

a lower in a large compartment, to obtain the same result. In Nature, we know, nothing approaches or grasps a bird except with evil intent, and we can hardly expect it to accept us, not knowing our intentions, against all its deeply inherited and justified instincts. That is why a strange bird is not stupid when it dashes about so madly upon a person's approach. It is not terribly worried either, but just following its natural instinct to get away from a possible danger. If one can observe it unseen, a difficult thing to do on account of its acute eyesight, it will usually be found that it ceases its frantic endeavours. At the same time, it may still do its utmost to get out, not because it is frantically beating its wings against its prison bars, as some well meaning people will have it. It does not realize such a thing as a cage, but is trying to get through the vegetation, as it appears to it. There is hardly such a thing as an impenetrable bush to the wild creatures—on the contrary, the dense vegetation is often their salvation, as it receives them and ensures their escape. So the wires to the bird appear like a bush it cannot get through, and its main idea is to take no chances. This escape into dense bush habit is inherent in many mammals such as antelopes, and also struthious birds. If allowed into a new paddock without previous preparation, it sometimes happens that they dash headlong into the opposite fence expecting to go through it, with serious injuries, if not worse, resulting. To return to the bird—in a cage, of course, the distance is too short for sufficient speed to be attained to do much harm, although abrasions on the face may be caused. If a bird is very wild, it may be necessary to have hessian fixed temporarily, where it mainly concentrates, or even to have a cage with wooden bars, merely temporarily of course, which are less damaging than wires. There is, however, a much greater risk when releasing the bird into a strange aviary, or for the first time, on account of the speed attained. It is therefore advisable to place the cage inside the shelter of the aviary for a few days, in order that it can get acquainted with the sight of the other denizens (and they with it) and with its surroundings. Then if its cage door is left open, it will come out quietly. This acquaintance will also help to prevent the other birds ganging up on a total stranger. There is another angle to this, many insectivorous birds after being in a cage where they feel at home and safe take it badly upon being released, and will mope in a corner, with perhaps fatal results if left too long. Shamas come to my mind as being very prone to this, which can be avoided by the method mentioned.

Apropos of a bird's acute eyesight, already referred to, I think T. H. White, in his book *The Goshawk*, summed it up admirably. While trying to stalk his bird, which had got away, he said he noticed one thing about the birds he encountered, especially crows, hawks, and rooks, and that was if you saw a bird you could be sure

it had seen you first. Another instance of their keen vision is seen in a small bird nesting in a hedge. Although a long hedge of dense vegetation looks just the same to one throughout its length, it will fly headlong and parallel to it, before unerringly plunging into the small gap leading to its nest. To revert to the Shama. If one looks at it from its point—it is in a home, where it feels safe, and where food and water are at hand. It is suddenly turned into a large hostile (to it) area, with perhaps other hostile occupants, does not know where food and water are, and is too dejected to search. It gets into what it feels is a quiet spot and lies low, consequently suffers from strangeness and exposure if left, and can starve in the midst of plenty. The remedy is to accustom it first. It often becomes necessary to catch a bird from an aviary for some reason. One has to use a net, upsetting all the other inmates and perhaps causing injuries to them by collisions with the wire. As we have already discussed the aversion a bird has to being caught, I would suggest the following. Suppose we put a trap cage, with a string to close the door as it becomes necessary, installed as a permanent feature of the aviary, and put the food tins inside always. As they would all go in and out freely, the bird wanted could be caught with the minimum of disturbance, as it would then only be necessary to take it out of the cage. This would aid in inspiring trust in the other inmates, as birds have extraordinary memories for many things, especially those which involve fright or discomfort. I have not found that noise itself worries them to any extent. A sudden bang will make them jump, but they recover almost at once. It can be appreciated that a bird which stopped to brood over any sudden happening would soon fall a victim to a nearby predator. Of course, it is possible that a long-legged bird could slip and break its leg on a smooth surface in the same circumstances. The bombs during the war only scared the inmates of the Bird House temporarily; one reason for this may be their familiarity with thunder, which can be terrifying, in tropical zones especially, though this does not seem to apply to some larger mammals, such as elephants. They, however, do not have the same need to recover quickly. As for ordinary noises, birds seem to like them to a certain extent, as they join in the din. I have often heard a bird which normally never sang, thoroughly enjoying itself when the House was full with a Bank Holiday crowd. I doubt whether noise interferes with breeding to any extent, if they are accustomed to it, but a sudden commotion when they are living in quiet surroundings is another matter, and is likely to cause abandonment of the nest. This is more unlikely if the young are hatched, even if unwise. Predatory birds being uncertain breeders, it was rather surprising that we bred Great Eagle-Owls at the Zoo on at least three occasions, with lorries thundering away a few yards off on the outside road; this shows how a bird can

become used to ordinary noises. Of course, with predatory birds and some others, such as Blue Pies, there is always a chance that the parents will devour the young, whether kept in secluded surroundings or not, and I feel inclined to put this down to the parents craving for freshly caught food, particularly when they have young as they would be on the hunt incessantly. Naturally one would expect to find birds bred in quiet aviaries very much wilder than those used to plenty of movement. This applies to small birds in general, and one has a much greater certainty of taming them if they are kept where the owner or his family spend their time, rather than in a room where they only visit occasionally. In the same way, birds kept in a range of aviaries will be tamer and steadier if they can see a visitor approaching before he, to all intents and purposes, suddenly bursts through a hole in the wall. The latter causes a panic, all the birds making a frantic dash to get outside. A wire panelled door and another panel let in the dividing wall are indicated here.

Birds, mammals too, are extremely averse to any change of routine. Unlike us, they do not hanker after anything different, whether food, cage, or surroundings. I do not mean a sameness of diet, as naturally we try to give them as much variety as possible. But give them something new and they turn their "noses" up at it. I have known a large mixed aviary refuse to touch wasp grubs and other insects, merely because they were new. Yet they would go crazy over mealworms. Our fruit-eating birds would not entertain dates as a food. Then came the war, and for a time we were able to get war-damaged raisins and sultanas. This supply came to an end with the depletion of these damaged stocks, but fortunately damaged dates became available. These they absolutely refused to look at, until eventually, with no other alternative, they began to eat them. In time, again, other fruits became possible, when they, one and all, refused to eat anything but dates for some time. We almost always find an escaped bird strives might and main to get back into its cage or aviary if it happens accidentally to fly out of the door, that is unless it happens to lose itself behind trees or houses in the first headlong dash. I imagine that we, in a hostile world, would similarly prefer to remain where we felt safe and had food and shelter, remembering that the unknown does hold dangers for the bird, unlike us, for whom it merely spells adventure. In some instances it may happen that a bird does not recognize the external appearance of its cage, but if it does that is where it makes for. Amongst many instances of this I think one concerning a Common Partridge is interesting. A lock on an outside aviary door failed to catch and amongst Laughing Kingfishers, a Wandering Tree-Pie, etc., which all returned subsequently, the Partridge was wandering about on the path outside. I got one of the keepers to go round the other way to try to walk it back but, as luck

would have it, a child burst out of the door of the house just as it got near. Up it rocketed, over reservoirs, fences, and trees into Regent's Park. It was war-time, the Park was closed, and the grass a foot or more high. I had written it off, when three mornings afterwards a gardener found it waiting outside the aviary door. He opened the door and in went the Partridge, settling down quite happily. One can perhaps understand a passerine bird, upon taking stock of its position, flying to an adjacent point near its aviary, but for a ground bird, hiding in long grass, never flying except by necessity, it is certainly extraordinary that it should find its way back to a door opening in a lobby. It had to come back over high double fences and other obstacles.

But after all a bird at liberty has its sad moments as well as those when it is on top of the world. In northern climes there are exposure and starvation during winter besides enemies. These last are an enormous factor in the tropics, in fact, so many creatures prey on small birds that one can wonder how they maintain their numbers. I believe it has been estimated that the average life of our Robin is thirteen months. They have to be on the *qui vive* unceasingly from aloft and below, and only their capacity for quick recovery prevents life being a sorry business. Survival is not easy, but there can be no regrets on our part. It is Nature's way, and they are attuned to it, but we can understand how they appreciate the safety of a cage or aviary where food is at hand within a short time of accustoming themselves.

To revert to birds' dislike of change, how often can one see a bird hating to be put into a new cage. I have seen birds in cages so dilapidated that they were tied together with pieces of string, and when in sheer desperation a new cage was provided, the occupant moped for two or three weeks. New perches or feeding tins will have a similar effect, the occupant avoiding them as long as he possibly can. My own birds at home sometimes keep swearing until we have to find out what is the matter. It may be a newspaper which has got under a chair unseen by us and on its being restored to its proper place all is peace again. When I was a boy we had an ordinary Java Sparrow at home, but "he wasn't ordinary". He was one of those birds who preferred a dilapidated cage held together by will power only, and refused to take to a new one for a long time. He was a really sweet singer, the only one I have ever heard which really sang nicely, and I have had hundreds under my care since. He was kept on a windowsill in my bedroom and it was usual to hear him having a bath at one or two o'clock in the morning in the dark, when one was just able to distinguish his cage in the window.

One example of a bird's extreme dislike to any alteration is, I think, shown by the following case of a British Reed Warbler in the Bird House. When it first arrived, thinking to give it a very faint imitation

of its natural surroundings, I put a twig in its cage, which had an offshoot at approximately right angles. This was fixed in its cage with the offshoot pointing upwards, the idea being that it could assume the same position as if it were clinging to an upright reed. After this twig had been in its cage for a long time, some two or three years, and had received repeated cleanings, it seemed to be time for it to have a new one. As an exact replica was not available, mainly the reason why it had the other one so long, and anyway it did not seem to matter a great deal (events proved me wrong), an ordinary twig was substituted. Upon this it immediately went off colour and sat in a corner all day with his eyes closed. It looked as if it were going to die, and I really think it would have done so. The next morning it looked worse, but an idea occurred to me—had the removal of his twig any connection with its loss of health? So we searched the rubbish for the old twig which, fortunately, for some unusual reason had not yet been removed. It was soon found, cleaned, and restored to its cage with the result that within half an hour it was its usual self again and there was no further sign of illness, either then or later. Undoubtedly his illness and recovery were due only to the removal and replacement of this important (to him) twig.

We sometimes wonder why a pair of birds kept together do not get on well, and perhaps one bullies the other—very often the bully is the hen, in Bullfinches, for instance, and Birds of Paradise. We can understand this better if we reflect how even a breeding pair of wild birds are seldom together, one or the other being a field or more away, a great deal of the time. No doubt a human married couple would have their differences if they were confined to one room all the time but, not having the primitive nature of the bird, they would do their best to arrange matters amicably, at least we hope they would. With our bird, on the other hand, obeying Nature's behest, it just attacks the object of its dislike all out. At liberty, of course, with all wild creatures tragedy is averted by the weaker ones, whether physically or in spirit, making good their escape. As our bird cannot do this, one or the other must be removed. It is no use to try keeping them together in the expectation that they will become used to one another. Even if the bully does not actually peck the other one and just drives it off the perch or feeding tin, it will take all the spirit out of it and you may find it dead, without any injury being inflicted, even in an aviary. In the same way in which we hear of a primitive native fading and dying because he has had a curse put upon him, so can a bird die at will, so to speak, if it is not perfectly happy. For this reason, there can be no cruelty involved in keeping birds in captivity, as long as they are fed and attended properly. If they bath, feed, sing, and keep their plumage in order, they are perfectly happy, besides living much longer. There are no two ways about

this, as if they are not happy they just fade and die for no other reason, just as a plant does if grown in uncongenial soil. A curious thing about birds (and doubtless mammals) is that if one dies for some reason you are quite aware of or for no reason at all, one can almost invariably find it has a complaint—which could have caused death, although it had shown no signs of such. The explanation for this, I take it, is that few birds, like us in that respect, are perfectly healthy. This drawback, however, does not prevent them living out their normal life if all else is well and it is a normal provision of Nature, especially in the tropics. In certain instances, also, it is possible for a bird which is known to be a young one beyond any shadow of doubt, to show every sign of senility when a post-mortem is undertaken after death.

Well, I have mentioned these things to try and show how temperamental our birds are, and in addition to knowledge of the proper care of them, which we can obtain from one of the many books written to give advice in bird-keeping, it helps a very great deal if we, as I said at first, try to identify ourselves with them and put ourselves in their place. Domestic livestock, whether mammal or bird, adapts itself to all sorts of artificial treatment but, with the wild birds especially, it helps enormously towards success if we pay regard to their necessarily highly strung constitutions and to the conditions when they are at their best, imitating nature at her kindest mood as far as we can.

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BREEDING OF THE SENEGAL COMBASSOU (*Hypochera chalybeata* Müll.) IN CAPTIVITY

By HOLGER POULSEN (Copenhagen, Denmark)

The Senegal Combassou is a very handsome and interesting little bird, but, nevertheless, it is not common in bird collections, at least not here in Denmark. This is obviously due to the general assumption that it does not breed in captivity, and that it disturbs other breeding birds. Little is known about the breeding biology of this bird, but it is strongly suspected of being parasitic. Below are given some examples from the literature of the subject. In his study of the breeding parasitism of the Viduinae Neunzig (1929) states that observations of parasitism in *Hypochera chalybeata* have not been made in the wild, and according to some aviculturists "brütet *Hypochera* nicht selbst". Roberts (1949) writes about *Hypochera*: "... nests of this and other species have been described, but it is probably parasitic like other related species and genera. . . ." Hoesch (1939) points out that there is strong evidence that *Hypochera* is parasitic

as no records of nests exist, but on the other hand the fosterers are not known. Bannerman (1953) says about *Hypochera chalybeata*: "There has been much speculation as to whether or not the Senegal Combassou is parasitic on other species, especially on *Lagonosticta senegala*, the Fire Finch, but actual proof is not yet forthcoming." Chapin (1954) writes: "We still have much to learn about the combassous. Surely their eggs are always laid in the nests of *Lagonosticta*, *Estrilda*, and perhaps some allied members of that same group." The Morels (1955) are the only ornithologists who have made actual observations of the breeding habits of the Senegal Combassou. They write: "... nous avons jamais trouvé de nid d'*Hypochera*, ni jamais observé d'adultes en train de construire, bien que cette espèce soit très abondante dans notre région. Par contre, nous avons remarqué à plusieurs reprises que la femelle d'*Hypochera* visitait souvent les sites de nidification favoris des *Lagonosticta*. Nous avons enfin remarqué à plusieurs reprises la présence d'un jeune *Hypochera* parmi des groupes de jeunes *Lagonosticta* qui continuent à suivre leur parent mâle après la sortie au nid, cette jeune Veuve Combassou était alors nourrie par le *Lagonosticta* adulte, comme les jeune de cette espèce."

An indirect proof of the breeding parasitism of the Combassou is pointed out by Neunzig (1929). He found that the mouth markings of the nestling of the Combassou are very similar to those of the nestling of *Lagonosticta senegala*, and the juvenile plumage of the two species in question are also very similar to each other. This, he thinks, indicates an adaptation of the mouth markings and juvenile plumage in the Senegal Combassou to those of the foster-species. The Morels (1955) also mention the striking similarity of the palate markings in the nestlings of the two species.

Records of breeding in captivity are few. Russ (cited in Butler, 1899) says that he had a pair of Combassous where the hen laid eggs in the nest of a pair of Senegal Fire Finches which neither proceeded to egg laying nor brooding of the alien eggs. Later the hen Combassou restored an old Zebra Finch nest and laid five eggs which were incubated by the female alone in twelve days, whilst the male defended the nest and pursued all other birds. Neunzig (1921) says that the Combassou has bred a few times in captivity, and that a pair used an old nest of a Zebra Finch which they repaired. Probably he refers to the same case of breeding as mentioned by Butler. Boyd (cited in Hopkinson, 1926) says that he had one young bird reared by Cordon-bleus (*Uraeginthus bengalus*), and that the Cordon-bleu female and the Combassou female both laid eggs in the same nest, but the latter took no further interest.

Therefore it may interest both aviculturists and ornithologists that we have had two breeding results in recent years. Two different

aviculturists were so lucky as each to have a pair of Senegal Combassous breeding in their aviaries. In the first case in 1951 a pair parasitized the Fire Finch (*Lagonosticta senegala*) (A. R. Nielsen, 1951); in the other case a pair built their own nest in the summer of 1955 (K. Nielsen, 1955).

In the first case a pair of Combassous were placed together with other small birds in an aviary ($5 \times 2.70 \times 2.5$ m.) planted with elder and spruce and grass on the ground. When the male got his brilliant plumage he made his courtship flight, hovering in front of the female, or over her, on flapping wings with his body feathers slightly ruffled, and twittering; but it did the same to Bengalese and Indian Silverbills. The female showed interest in the nests of different birds and was seen on several occasions sitting in the nest of a pair of Senegal Fire Finches that had laid eggs, and which were not frightened by her presence. One day four eggs were found outside the nest, but the Fire Finch was still brooding. Some days later the luminous spots of the gape wattles of the young ones were seen in the nest when the pair had left the nest while feeding. They brought food for the nestlings, viz. fresh ants' pupæ, water-fleas, and sprouting seed and after some time two young ones left the nest. They resembled the Combassous, not the Fire Finches, and when they grew older they scratched with their feet with a shuffling motion when seeking for seeds on the ground. The Fire Finches cared for the two young Combassous for three weeks after they had left the nest. Then they stopped feeding them, and one of the young birds perished, whereas the other was independent and was doing well.

In the other case of Combassous breeding in captivity a pair was put in an aviary ($4 \times 1.75 \times 2$ m.) together with other small birds, among them a single male Senegal Fire Finch and two males and a female Cordon-bleu. At the beginning of July the male Combassou was collecting nest material, viz. grass and coconut fibres. The nest was placed high up in the aviary in a thick shrubbery of twigs; it was a loosely-constructed domed nest of the waxbill type with the entrance pointing obliquely downwards. It was not observed whether both mates shared the brooding duties, but it was noticed that both male and female were in the nest during the night. Both male and female took part in feeding the young in the nest; the female always flew into the nest first, the male followed her, and he always appeared again first. Perhaps only the female fed the young and the male only fed the female.

At the beginning of August two young ones left the nest and were now exclusively fed by the male, who also guarded the young very intensively against other birds, which he pursued. The female no longer showed interest in them. The young sometimes gaped and

begged for food from other birds, such as Zebra Finches and Cordon-bleus, and now and then they succeeded in getting some. During the first days after the young had left the nest they still slept in it together with their parents, during the night.

The observations made by the Morels and the first of the two breeding results in captivity actually show that the Combassou is parasitic. The second breeding record shows further that the Combassou is also able to build its own nest, but the problem still remains to be solved whether it regularly has two methods of breeding or only occasionally builds its own nest, e.g. under the abnormal conditions of captivity. At least, no records exist of nests of *Hypochera* in the wild, but the interesting fact has been established that nest-building, incubation, and rearing behaviour are not lacking in *Hypochera chalybeata*. Another question is if it regularly parasitizes on birds other than the Fire Finch. Neunzig (1929) has implied that each of the Viduinæ has its particular waxbill species host, but this is by no means definitely established. Thus, *Vidua macroura* is known to parasitize at least nine species of *Estrilda* and *Lagonosticta* and two weavers, *Coliuspasser ardens* and *Amauresthes fringilloides*, while there is some evidence that *Vidua regia* lays its eggs in the nest of a warbler, *Prinia flavicans* (Friedmann, 1950). Neunzig was well justified in his belief that the Fire Finch is the chief fosterer of *Hypochera chalybeata*, but other species besides the usual host may also play a part.

Three members of the Viduinæ are definitely known to be nest parasites. Thus, as already mentioned, the Pin-tailed Whydah (*Vidua macroura*) chiefly parasitizes *Estrilda* waxbills and their allies, the Paradise Whydah (*Vidua paradisæa*) parasitizes the Green-winged Pytilia (*Pytilia melba*) and other Pytilias, and the Shaft-tailed Whydah (*Vidua regia*), the Violet-eared Waxbill (*Granatina granatina*) and probably others. The other species of *Vidua* will presumably in time be found to be parasitic as well.

Neunzig (1929) pointed out the close similarity in palate markings and gape wattles between the nestlings of different whydahs and their hosts, and that the whydahs owe the possession of these ornaments wholly to mimicry of their fosterers. Delacour and Edmond Blanc (1934) are more cautious and assert that there is not enough evidence of this theory. Hoesch (1939) and Chapin (1954) disagree with Neunzig and take the more balanced view that the whydahs are closely related to the Estrildinæ, and that their young had similar ornaments before the whydahs developed into nest parasites, and that these similarities may have been perfected by selection.

It is to be hoped that aviculturists will keep Combassous together with Fire Finches and their allies and try to unravel some of the problems which the breeding of the Combassou presents. It should

be a fascinating task to make breeding experiments with this bird, and it would well repay aviculturists to study it.

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REARING THE HOODED MERGANSER

By S. DILLON RIPLEY (New Haven, Connecticut, U.S.A.)

The Hooded Merganser of North America, *Mergus cucullatus*, is one of the most beautiful of the waterfowl. The species has been recorded as an accidental visitor perhaps a half-dozen times from Western Europe and the British Isles. Only a little larger than the Smew, the adult male in breeding or winter plumage can be immediately recognized by the white breast with sickle-shaped black bar on the side (like a Wood Duck or Mandarin), the vermiculated brown flanks, the white on the scapulars and lesser wing-coverts, black back, and the striking white, black-edged fan-shaped crest which in life is often nervously raised and lowered like a signal flag.

The Hooded Merganser, unlike the Smew, had never been kept successfully in captivity until Mr. Charles A. Pilling, of Seattle, Washington, found a female, crippled during the autumn hunting season, in 1950. This bird, starting on natural food found in his ponds, soon settled down and finally started eating grain and pellets (compressed tablets of mash) like the other wildfowl.

In the spring of 1953 Mr. Pilling's female laid eggs and Mr. Pilling made every effort to secure a male. On Christmas Day in 1953 he brought home a male that had been shot in the hip and with a badly broken wing. By keeping him in a small wire cage, with

a bantam hen for company (they became friends in about a week). Mr. Pilling was able to keep the wild male alive and at last to make him tame. Eventually he was brought into the kitchen, still in his cage, and made friends with Mrs. Pilling, the four Pilling children, and the dog and family cat.

The bird was force fed on a mixture of one-third fresh fish, one-third dog food, and one-third meal containing wheat germ oil, brewer's yeast, and powdered skim milk, among other things. The forced feeding lasted ninety-four days before the drake began to eat by himself. He was bathed daily.

After he began to feed naturally he was given an airing on a small pond each day for a week, after which he gradually began to resume a more normal life. However, he still prefers to feed from the hand and soon taught the female to do so as well.

The spring of 1954 the male went into moult, perhaps due to his artificial environment during the winter. The female Hooded Merganser mated with a drake Wood Duck, laid, and the eggs were fertile but the young died in the shell just before hatching. Mr. Pilling reports that the young looked like young Wood Duck, but unfortunately none was preserved. The spring of 1955 the two Hooded Mergansers were segregated and the female laid ten eggs. The eggs took thirty and a half days to hatch, from 12 noon on 29th April to out of the shells on the morning of 29th May.

The surviving ducklings were force fed every hour during daylight for the first three days and every two hours for the next three days. The birds started eating mealworms on the fifth day. After dipping the mealworms in a mash the young soon started eating a mixture of egg, mash, and chopped lettuce. From then on they were fed stripped raw beef heart, but after two weeks they fed mostly on a regular commercial game bird mash. Mr. Pilling remarks that in fact the old birds as well as the young really prefer this feed, Purina "Game Bird Startina", to anything else, "except my wife's home-made stone-ground whole-wheat bread. They will drop everything for this, and so will I," he relates.

By mid-August Mr. Pilling had six young reared out of nine fertile eggs. At six months one of the young wrenched its neck in an aperture in the wire fence and subsequently died. The remaining five developed into two males and three females.

This spring, 1956, Mr. Pilling has hatched twelve young Hooded Mergansers so far, an avicultural triumph. Truly he is to be congratulated for the first keeping and rearing of these enchanting little ducks.

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HYLOCICHLID THRUSHES IN CAPTIVITY WITH NOTES ON THEIR BEHAVIOUR

By WILLIAM C. DILGER

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There are five species of North American forest thrushes commonly assigned to the genus *Hylocichla*. They range in size from about that of a Nightingale to that of a Song Thrush. They are all brown above, pale below, and with dark spotting on the breast. All are true thrushes (not chats), and there is evidence that the Wood Thrush *H. mustelina*, the largest species, is not especially closely related to the others and may, in fact, be best considered in *Turdus* (Dilger, 1956a). The remaining four are closely related to the South and Central American Nightingale-Thrushes of the genus *Catharus* and are best considered congeneric with them (Dilger, *ibid.*).

With the exception of the Wood Thrush they are very similar in appearance and are moderately difficult to distinguish by sight in the field. Comparatively minor differences serve as distinguishing characters. The Veery or Wilson's Thrush, *Catharus fuscescens*, is a uniform tawny brown above and white below with a buffy wash on the breast which has a few indistinct spots. The Hermit Thrush, *C. guttatus*, is rather heavily spotted on the breast and with a reddish-brown tail which is characteristically raised and lowered. The Olive-backed Thrush, *C. ustulatus*, and the Grey-cheeked Thrush, *C. minimus*, are very similar in appearance but the former has a conspicuous buffy eye ring and cheeks whilst the latter has these areas decidedly greyish. The Wood Thrush, besides being the largest, is stockier in appearance with very extensive and very dark spotting on the underparts. The head is also more reddish than the rest of the dorsum.

The ranges of these species overlap extensively and in view of their similar appearances and similar ecological requirements questions arise concerning their reproductive and ecological isolating mechanisms. Unlike their appearances, their voices are quite dissimilar and investigations have shown that vocalizations provide the chief sign stimuli upon which correct mating choices depend (Dilger, 1956b). Rough segregation as to habitat and adaptive differences in limb and bill proportions correlated with different feeding niches provide ample ecological isolation (Dilger, 1956c).

A number of individuals representing these species were kept in captivity in conjunction with some of the investigations carried out on their hostile behaviour as this relates to their reproductive isolating mechanisms. All five have been in my possession at one time or another, but I can say this only as a technicality as I had but one Grey-cheeked Thrush and it, a wild-caught adult, died a few hours after capture !

All of the others, with the exception of one Wood Thrush, were obtained from the nest and hand-raised. These nestlings were easily reared on a diet of chopped earthworms with a gradually increasing proportion of canned dog food. It is usually difficult to get enough insects to feed normally insectivorous birds and this canned dog food proved to be a good substitute. Since all of these species consume quantities of small fruits these were frequently provided. Blueberries, cherries, grapes, raspberries, blackberries, currants, and mulberries were readily available and eagerly consumed during the summer and autumn. Raisins, chopped apple, and other commercially available fruits were utilized during the winter. Dried raisins are eaten but the birds prefer them soaked. The Hermit Thrush which I have at present has learned to soak them in his water dish if they are proffered dried. This was learned by chance as he initially used to drop them in the water by accident and subsequently retrieved them well soaked. He now does this quite deliberately. The staple of canned dog food had some disadvantages. First, it spoils rapidly when not under refrigeration and hence a close watch must be kept on the amount on hand in the cages. Secondly, although the birds appeared in good condition their droppings were somewhat loose and of a brownish colour. A commercially prepared dry dog meal (Kasco) was next used. This, of course, does not spoil when dry but the droppings, though firmer, were still brownish. At present I am using Spratt's Mockingbird Food as a staple. This is given with a small admixture of grated carrot and hard boiled whole egg. My birds are thriving on this and their droppings are firm and sharply black and white. Small fruits are still given upon occasion and also mealworms and whatever other live food that comes to hand. They can handle small earthworms but large ones must be cut into pieces for them. These are taken with relish. Small strips of lean raw beef are also consumed eagerly. A vitamin supplement is given, especially in the winter. This has been a water soluble commercially available all-purpose vitamin mixture known as ABIDEC. Zymadrops would also be suitable.

The birds are housed in glass-fronted, half-inch hardware cloth-covered cages which measure 36 inches long by 20 inches deep by 20 inches high. Two are housed quite comfortably in such a cage and three seem not too many, but new combinations of individuals have to be watched carefully for several days in order to be sure that none is being persecuted by the others. Food and water are kept in finger bowls and the cage floors are covered with newspapers.

All are great bathers. Water in wide shallow pans is provided for this purpose every other day or so. Bathing behaviour is manifested as soon as the birds are old enough to leave the nest. The bathing motions are innate but the fact that they have to be performed in the water has to be learned. This has been borne out by observations

on the Wood Thrush, Veery, Hermit Thrush, Olive-backed Thrush, and the American Robin, *Turdus migratorius*. The first bathing motions are frequently carried out on the dry cage-bottom right after the bird has dipped its bill in the bathing pan. In these cases the bathing motions are as typical and intense as real bathing and are usually followed by the shaking and preening that occur after true bathing, which suggests that the entire sequence tends to be followed through once the performance is initiated. Adult birds occasionally perform this "dry bathing" if the bathing drive is high and the bathing pan is pre-empted by another bird. In these cases rather intense intention movements to bathe usually precede the actual bathing movements. In these cases, too, the bird typically performs the entire sequence including the drying and preening movements. It is ludicrous to see such a bird after "bathing" fly heavily, as if soaking wet, to a perch and commence the lengthy series of shakes and preens that normally follow a bath. This "dry bathing" has been reported for a number of species (see Morgan and Tyrrell in Armstrong, 1947, 120). This may be an example of vacuum activity or *leerlaufreaktion* as described by Lorenz (1937), in which a behavioural sequence is released by the presence of a normally inadequate (suboptimal) stimulus providing the internal drive for that particular behaviour is high enough. The Hermit Thrush which I have at present frequently exhibits this type of behaviour by "flycatching". He will suddenly appear to be intently following some moving object in the air with his eyes, sally out, "capture" it with a loud bill snap and then return to the starting point where his "prey" is beaten on the perch for a moment before being obviously "swallowed".

I have made some observations on the behaviour of my present Olive-backed Thrush before it fledged which may be of some interest. As is the case with other young birds with which I have had experience it would present a faecal sac at each feeding. The actual feeding, however, is not necessary to stimulate this presentation as it would do so even if the food was accidentally dropped, or if feeding was merely pretended. Apparently just the stimulus of the presentation is enough to start the peristaltic wave along its large intestine which presumably causes the faecal sac to travel to the cloaca. The hind portion of the body is sharply elevated before the faecal sac appears and possibly pressure of the nest rim against the lower belly serves as a releaser for the actual expulsion of the sac, as this bird would scuttle rapidly backward until the cage wires came into contact with its rear and then the sac would be expelled, usually falling outside the cage. This behavioural pattern would be of considerable sanitary value in the wild in case the parent neglected to seize the proffered sac. The stubby tail is wagged vigorously from side to side immediately preceding the defecation. Unfortunately, I failed to keep similar records of my

other birds when they were young but my recollection is that a similar pattern was followed. The fledglings typically do not defecate during the night and the evacuation following the first feeding of the morning is unusually voluminous. When the young reach the stage of fledging the faeces are no longer presented in a sac and the "backing" behaviour abruptly disappeared at this time in the Olive-backed Thrush mentioned above.

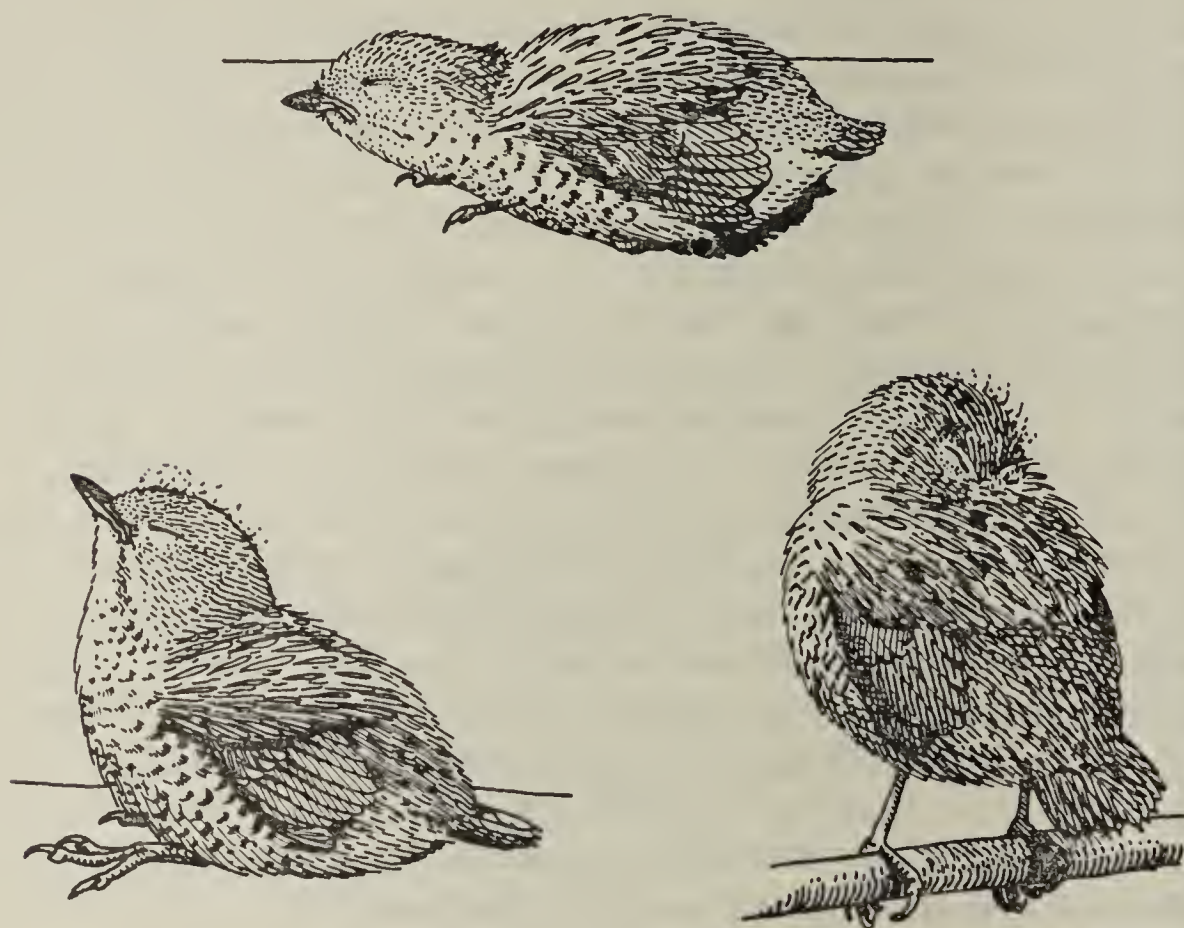


FIG. 1.—Sleeping postures (from a young Olive-backed Thrush). Upper : head extended ; lower left : head retracted ; lower right : adult position with bill and face under scapulars.

It was interesting to follow the ontogeny of the typical sleeping postures (Fig. 1). Up until about eight days old the young of all of these species sleep with their heads limply extended in front of them or over the backs of their siblings ; soon, however, they begin to sleep with the neck retracted and the bill pointing upward at an angle of about 45 degrees. The extended neck posture is seen less frequently until the birds finally sleep in the retracted posture only. At about ten days of age the head is sometimes turned over the shoulder and the bill and face thrust under the scapular feathers in the adult sleeping position. This gradually becomes the final sleeping posture adopted although adults sometimes doze during the day in the retracted posture. I could discover no preference in individual birds for either the right or left side when sleeping in the adult manner, but these species are difficult to surprise while asleep once they are fledged.

The bill and face are thrust under the scapulars, which are raised a bit, with a short, wriggling movement strongly reminiscent of the "tremble-shove" movement of nest-building birds working a twig into the nest.

Pellets composed of compacted indigestible remains of food are typically cast by all of these species much after the fashion of owls and hawks. Pellet casting in passerine birds has not received much attention in the literature (see Tucker, 1944). The size of the indigestible remains seem to have some bearing on whether they will be voided orally or in the fæces. Small seeds such as those found in raspberries or strawberries are voided with the fæces but larger items such as cherry stones are voided orally. The compacted larger fragments of insect chitin are voided orally but the tiny earthworm setæ and very small fragments of insect chitin are found in the fæces.

Sunbathing is done whenever the opportunity presents itself. Sunlight is not necessary to elicit the response but any warm, bright light source such as a desk lamp will do. The bird stiffly orients its body at right angles to the source of heat and light, fluffs out its feathers, usually spreads the uppermost wing or raises it, spreads the tail and then remains in this position for some minutes at a time. The eye nearest the light source remains wide open and the bill is typically held parted. These species begin this behaviour at an early age; all of my birds doing it as soon as they fledged. Sunbathing often follows water bathing if the proper stimuli are present at the time. Heat seems to be a more important stimulus than light, although light must be present (they will not sunbathe to a hot iron nor to an ultra-violet lamp which gives off little heat). An infra-red lamp, however, stimulates a response quite readily.

My Olive-backed Thrush rather inexpertly captured crawling insects for the first time when it was eighteen days old and had been fledged for about four days. It would not pick up inert food material until it was twenty-four days old. From this day on it fed itself but would "beg" for food when approached for several days more. From the date of fledging flying insects caused this bird to follow them with an eye and to make intention movements to sally after them.

Young of these species when near fledging indulge in much preening, shaking, stretching, and other comfort movements. The rapidly feathering wings are often whirled rapidly, almost lifting the youngsters. In the nest the wings are most frequently stretched by bringing both over the back while partly folded. Later the commonest stretching movement is the usual stretching of a wing and a leg on the same side. A common movement seen in fledglings and younger birds is a thrusting upward and forward with the extended neck while the head is rapidly flirled in a rolling manner from side to side. This reminds me very strongly of the preliminary head shaking in Mallards.

I have not seen adults do it. The legs may be stretched simultaneously by the bird straightening both legs to their fullest extent while standing or perched. A typical full-stretching sequence in these forms is to first stretch both wings over the back, then stretch a wing and a leg on one side, followed by a similar movement on the other, and lastly stretching both legs at once as described above (Fig. 2). The jaws may be stretched and this is distinguished from the somewhat similar throat gaping by the context of the action and by the fact that the jaws

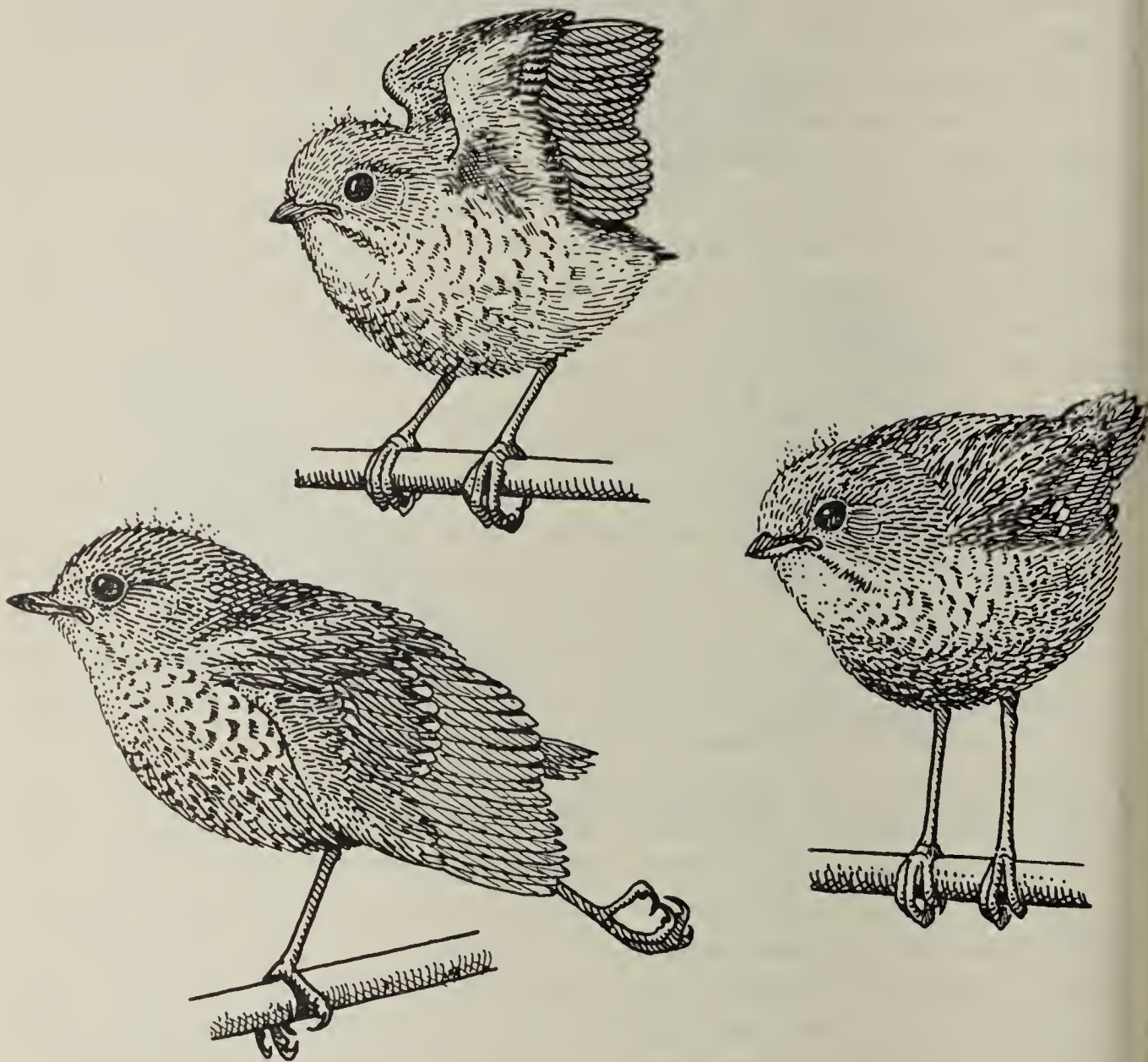


FIG. 2.—Stretching movements (from a young Olive-backed Thrush). Upper: both wings; lower left: left wing and leg; lower right: both legs.

are shut quickly in stretching. Bill wiping is done in the typical passerine fashion, first on one side and then on the other. If the bill is particularly dirty more than one wipe on the same side of the perch may be performed before changing over. Scratching the head with a foot is, of course, done in the usual over-the-wing fashion of passerines.

These are rather "volatile" birds in regard to overt expressions of minor fluctuations in the relative and actual strengths of the attack

and escape drives. These slight fluctuations are reflected in varying degrees of crest-raising (attack) and slimming of the plumage (escape) and are displayed almost constantly during their daily activities. The reddish crest of the Wood Thrush is a particularly sensitive 'barometer' in this regard.

Fortunately, I have had little trouble with illness in my birds. Last fall, however, they all contracted some serious respiratory ailment and were literally at the point of death. I luckily hit upon a cure and all survived. In the United States and Canada, at least, various antibiotics for veterinary use may be bought without a doctor's prescription. There is a terramycin preparation available in collapsible metal tubes which have long nozzles and are designed for the treatment of mastitis in cows. In desperation I bought a tube of this material and gave each of my birds a squirt of terramycin orally. The long nozzle facilitates this and one only has to be careful to get the end of the nozzle beyond the glottis so as not to drown the patient. Recovery was amazingly rapid. All of the birds appeared perfectly normal three hours after treatment!

I plan to make more cages and perhaps an outdoor aviary to house more birds which will enable me to continue my behavioural observations on a larger scale. I hope to breed some of them. The Wood Thrush has been bred several times in captivity (e.g. Ivor, 1952), and the Hermit Thrush has been bred by Amsler, 1927.

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KEEPING WADERS IN CAPTIVITY

By A. F. MOODY (Lilford, Northants, England)

CURLEW (*Numenius arquata*).

Of all waders kept during half a century of bird-keeping few have appealed to me more or have been more interesting than the common Curlew; well-remembered objects of curiosity of my boyhood days when to see or hear an example on rare occasions passing high over the Yorkshire wolds was the sole extent of my acquaintance with this wild and wary species. Since then it was a red-letter day indeed first to visit their breeding ground upon the heather-clad moors; as was also the case when I first viewed them in numbers at their winter quarters in certain estuaries around our coast. Be these facts and reminiscences as they may, I have always in after years found a charm and pleasure in overcoming the extreme wildness and wariness of these graceful creatures and in having them around. Large and hardy enough to be almost cat- and rat-proof, they can be kept in walled-in gardens or in large enclosures where they show to the best advantage and find much of their own living. Ten or twelve years is no unusual period for an adult wild-caught Curlew to live in semi-captivity. During every moment of that time, be they standing sentinel-like with the various waterfowl, probing the soft earth with their long bill for earthworms, or adroitly capturing insects from the tall grasses with the same apparently unsuitable member, they are ever interesting, and their wild and weird cry renders them additionally attractive.

Food.—As to artificial food, newly caught Curlews when started in a small pen, take readily to fragments of fish, liver, or lean meat. They will also eat scalded biscuit meal or broken dog biscuit. This is a reserve food we get them on to by supplying in a shallow pan of water with the meat, etc. Once thoroughly on to artificial food they never forget it, and even when given access to several acres of ground will eventually, like domestic poultry, on being whistled come racing from a distance, morning and evening, to receive a few pieces of food thrown from the hand.

Hardiness.—As before stated, Curlews are comparatively hardy, but during deep snow or prolonged frost, it is kinder to confine them to a shed where unfrozen food and water can be kept before them.

OYSTERCATCHER (*Hæmatopus ostralegus*).

Hardy and equally long-lived as the Curlew, we have found the Oystercatcher very adaptable to aviary or enclosure life. Ornamental and rather busy little birds, they are almost continually on the move, and seldom give way to larger species. With us they showed a

preference for running around the water's edge, frequently uttering their well-known metallic chip or call, or occasionally pushing their long red bill into some other bird's face.

They also, as might be expected, favoured bare, stony ground, and made their very slight rubbings or nests upon the gravelled walks, a circumstance which, owing to unavoidable disturbance, prevented any successful breeding.

Treatment and general requirements the same as the Curlew.

The young of both species I have reared from the egg.

LAPWING (*Vanellus vanellus*).

Another delightful wader is the common Lapwing. These do well in either a pool-aviary or open enclosure. Being smaller, however, than the species already mentioned, they require more careful protection from vermin. A walled-in garden suits them admirably. This brings to my mind my first and youthful attempt at this form of aviculture, which was to keep a pair of wing-clipped Lapwings in the well-fenced garden of my boyhood home. There I well recollect the pleasure which these graceful and beautiful birds gave to the inmates of the house as they watched them from the windows trotting about a moderate-sized lawn, or wading in a small pool.

* * *

DONCASTER ZOOLOGICAL GARDENS

By E. F. GILMOUR, Director (Doncaster, England)

Members of the Avicultural Society may be interested in this new project being developed in Doncaster in connection with the Museum and Art Gallery. Many Members may personally know Mr. A. H. White, formerly of the Parrot House at the London Zoo, who has joined the staff here as Head Keeper. Both Mr. White and myself will be glad to meet any members who may be passing through Doncaster and who have a little time to spare. The Zoo is open every day, but a telephone call or letter would be advisable regarding week-ends to ensure meeting any special officer.

Apart from numerous common birds, some recent additions to the bird collections are as follows :—

Chestnut-bellied Starling (*Spreo pulcher pulcher*), a female Abyssinian Ground Hornbill (*Bucorvus abyssinicus*), and the Green-billed Toucan (*Rhamphastos discolor*). Four Cactus Conures (*Aratinga cactorum cactorum*) and a further pair of Finsch's Conures (*Aratinga finschi*). A very nice pair of Illiger's Macaws (*Ara maracana*) have also arrived, as well as two young African Ringneck Parrakeets (*Psittacula krameri krameri*).

Among the Cockatoos recent arrivals have been the White-crested (*Kakatoe alba*) and the Bare-eyed Cockatoo (*K. sanguinea ashbyi*).

A White-fronted Amazon Parrot (*Amazona leucocephala*) is one of our most interesting arrivals in this group, apart from an Amazon Parrot which we have not so far been able conclusively to identify. This specimen came from Costa Rica, but does not agree with any traced records from that region. It is very like the common Yellow-fronted Amazon, but has a rather different distribution of the yellow and the yellow frontal feathers each have an orange base. It does not appear to be a very young bird, but we are waiting to see what develops after a moult.

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BREEDING THE LUTINO NYASALAND LOVEBIRD IN CALIFORNIA

By DAVID WEST (Montebello, California, U.S.A.)

This pretty mutation first appeared in Australia during the early 1930's and was eventually established in Australian aviaries. An importation of seven or eight Australian-bred lutino Nyasalands into England in 1937 did not prove successful. Apparently the birds were almost all hens, and rather shy breeders.

In 1940 a Mrs. Reed, of El Monte, California, reported rearing a lutino. What became of this bird I do not know, but lutino Nyasas did not reappear in California until the 1950's. At this time the Rudkins, Junior and Senior, had several young lutinos reared from green parents, but were unable to establish a strain.

This year I was very pleased to find, among a nest of greens, a lovely lutino youngster. They are very easy to spot, even at an early age, for their skin is very light and the ruby-coloured eye is easily seen. This particular nest contained four greens and the one lutino. The parents reared the five without trouble, and all left the nest in due time.

Lutinos appear a little slower to learn self-reliance than their normal-coloured brothers and sisters. However, within a few days the lutino was doing just as well as the others, and has continued to do so. It would be my guess that lutino Nyasas, like lutinos of other species, are a little more sensitive to the light than normals of the same species. They seem to take a while longer in learning to judge distances, etc., but once used to the aviary do very well.

The contrast between the pink head and the bright yellow body is very lovely, and the pink is repeated in the tail feathers. They are

quite striking birds, and certainly the equal in beauty to lutino Ringnecks.

Since most *Agapornis* have a tendency to overbreed, to try and circumvent this I usually take and destroy their old nest a few days after the family has flown. Then by giving them new nest-boxes and fresh building materials it will usually require them several weeks before a complete new nest has been built, and during this time the adults have had a short period of rest. The favourite building material seems to be palm fronds, which are easily obtained here in Southern California and have the added advantage of retaining moisture and thus helping to prevent the eggs from drying out.

I feed my Nyasas a mixture of canary, oats, sunflower, millet, and hemp. In addition, they like greens of all kinds, and mine will eat oranges, apples, and are very very fond of fresh corn on the cob. While they are rearing young I feed soaked bread, and they seem to like this very much while in the process of rearing young ones.

* * *

LONDON ZOO NOTES

By J. J. YEALLAND

Of the birds received during July and August, three are forms not previously exhibited. These are a pair of the Chinese Pied Woodpecker (*Dendrocopus major cabanisi*), a Chinese Rufous-backed Shrike (*Lanius schach*), and a Noisy Robin-Chat (*Cossypha bicolor*).

The Woodpeckers are, of course, a race of the familiar Greater-spotted or Pied which they very much resemble. The Shrike is a graceful and delicately tinted bird. These were presented, together with two Little Egrets, two young Indian Coucals, a second Chinese Koel and a Black-faced or Masked Jay-Thrush, by Dr. K. C. Searle. The Noisy Robin-Chat (deposited) was shown at the National Exhibition last January and, if I remember rightly, the year before.

A tame young Ground Hornbill or Brom-vogel (*Bucorvus leadbeateri*) was presented by Mr. Raymond Hook and Mr. John Seago; an Aubry's Parrot, also known as the Gaboon Red-crowned or Red-fronted and the first to be exhibited here since many years ago, by Mrs. A. M. Stewart; four of what appear to be the Eastern Pin-tailed Sandgrouse by H.E. the Mutasariff of Erbil; four Ceylon Necklace Doves by Mr. Derek Goodwin; two Diamond Doves by Mr. Astley Richards and three Golden-winged Sunbirds by Mr. J. R. Newmark.

A Blue Whistling Thrush, two South American Black Vultures, two Tri-coloured Herons, two Buff-backed Herons, two Little Blue Herons, two Venezuelan Wood Rails and two Sulphury Tyrants have been received in exchange.

Racquet-tailed Humming-birds (*Discosura longicauda*) are again in the Collection, the first since 1934 when five were received—two purchased and three presented by Capt. de Quincey. Four of these did not live long but the fifth lived for $2\frac{1}{2}$ years when it died of senility.

Two King Penguin chicks have been hatched and the Gulls have bred well, four Greater Black-backed, two Lesser Black-backed, three Herring and one Silver being reared. A brood of Common Peafowl are now nearly half-grown and one of them is a Black-winged, a mutation unknown in the wild state. A pair of white Peafowl have a young family of four and there are a number of various young pheasants and some Upland and Egyptian goslings.

The Red-breasted Geese laid, but the eggs were infertile. Two Green-winged Kings have left the nest; also two Cockatiels, some blue-bred Masked Lovebirds, a Swainson's \times Red-collared Lorikeet, and two Crested Pigeons. A pair of Black Crakes at the Bird House nested and one chick hatched, but it did not survive.

The Long-tailed Parrakeets nested and four eggs were laid, but did not hatch. The hen has been here for nearly two years and the cock, a young bird not quite in full colour, for nearly a year.

The Satin Bower-birds built three nests, but no eggs were laid; a young pair of the Gough Island Coots also got as far as building a nest.

* * *

NEWS AND VIEWS

The Bronze Medal of the Avicultural Society of South Australia has been awarded to L. Ratzmer, for breeding the Turquoise Wren, *Malurus callainus*.

* * *

Vice-President Edward Boosey sends two items of interest. The first, that the old breeding pair of blue Ringnecks have reared a really splendid brood of five young ones which left the nest early in June. As two of last year's four young were disposed of there are now nine of these beautiful birds at Keston. The second item is that the Cuban Amazons have a brood—at the time of the report it was not possible to ascertain whether of two or three.

* * *

All too seldom is anything further heard of "first breeding" pairs. It is, therefore, all the more refreshing to hear of two such pairs that have been consistently successful in rearing broods. In 1949 E. N. T. Vane's Noble Macaws reared a nest of four and young have been bred almost annually since: The total reared must now be approaching thirty. This year four second and one third generation young were reared. Vane's Canary-winged Parrakeets reared four young in 1954, followed by nests of five both last year and the present.

Dr. Alan Lendon, North Adelaide, sends welcome news. He writes : "I have resumed aviculture to a minor degree ; largely at the instigation of my elder son. He does all the hard work and I look on ! " We now have pairs of Bourkes, Blue-wings, Elegants, Turquoisines and Splendids ready for the breeding season which is just upon us. Dr. Lendon goes on to say : " I have done quite a lot of field ornithology since I came home from England (nearly three years ago !) and have become much more familiar with many of our psittacines in the field. A few months ago, I was shown nineteen Orange-bellieds in the wild state about thirty miles from Melbourne. There were, until a few days ago, an aged pair still in our Zoo, but the cock has since died and the hen looks like following suit very shortly. I know of no others in captivity nowadays."

* * *

Reference to the early volumes of the AVICULTURAL MAGAZINE and *Bird Notes* shows that towards the end of the last century Madagascar lovebirds were advertised at between 2s. 9d. and 3s. 6d. a pair. At the turn of the century the price rose slightly to 4s. 6d. and this was maintained up to about 1905 when it gradually dropped until, just prior to the Great War, they were offered at as low as 2s. 6d. a pair. Supplies then became short and after the war the price rose steadily until 1925 when the top price appears to have been 25s. Then followed regular importations and by the time of the imposition of the Parrot ban in 1930 the price had dropped to 10s. Thereafter there were, of course, no further importations and the species was gradually lost to British aviculture. The Madagascar or Grey-headed Lovebird is virtually unknown to the present generation of aviculturists and is now regarded as a rare and very desirable species, as evidenced by the fact that recently a number of pairs were offered, and were not wanting in buyers, at £15-£18 a pair. The current price appears to be £10. And so, what was formerly regarded as the commonest of all psittacines is now considered quite a " collector's piece " !

* * *

Breeding reports : F. C. Astles, fourteen Mandarin Ducks and a clutch of Partridges. P. C. Bath, Leadbeater's Cockatoo, two young flying. Mrs. E. J. Birchall, three Quaker Parrakeets and three Golden-crowned Rosellas reared, otherwise a melancholy recital of clear eggs, young dead in shell and deserted chicks. A. Birtles, Gouldians have two young flying, these being fourth generation cage-bred ; also reared, Golden, Silver and Amherst Pheasants, two Carolina Ducks and two Bourke Parrakeets. F. J. Burt, Scaly Weavers filled a small box with moss and grass, leaving a tunnel to the back of the box where they made a round nest of feathers and hair ; the one egg was unfortunately infertile. R. S. de Q. Quincey, three Shamas flying. Sqd.-Ldr. A. Veritt, Black-crested Finch, nests of two and three reared, and one

young hatched in a third nest ; Cordon-bleu, two ; Zebra Finch, six chestnut-flanked white and several natural. A. H. Isenberg, California, one Regent Bird " four days off the nest ". R. G. Kirkham, Layard's Parrakeet, two young now flying ; Hooded Parrakeet, the eggs proved infertile. G. C. Lynch, one House Finch (*Carpodacus mexicanus frontalis*), possibly the first time the so-called " California Linnet " has been bred in Great Britain. C. M. Payne, Red-collared Lorikeet, a number of young hatched but the parents invariably neglect them when they are about three weeks old and, consequently, they die ; Oregon Towhee, reared young ; Rock Pebbles, Queen Alexandras and Pennants have reared young ; Yellow-backed Lories again had eggs. R. C. J. Sawyer, Yellow-winged Sugar Bird, two young hatched and fully reared : Roulroul, three eggs were broken before the hen finally settled down to incubate a clutch of five ; four young were hatched on 7th August and are now six weeks old. O. H. Young, eight Peach-faced Lovebirds.

* * *

Round the Zoos.

Chester.—At irregular intervals over a period of nearly two months an Emu laid about twenty eggs. Twelve were placed in an incubator and at the end of April eleven young hatched, most of which are thriving. Seven more eggs were then put in the incubator ; result not yet reported.

Moscow, U.S.S.R.—A Great Condor has been flourishing since 1892, sixty-four years.

New York.—The Bronx Zoo now possesses two Keas, acquired through the good offices of the Wellington Zoological Gardens, New Zealand. A previous favourite exhibit, known as " Old Shep ", lived in the Zoo for nearly twenty-nine years.

San Diego.—Birds listed as new to the collection are a Grey Plantain-eater and a pair of Giant Cassiques.

A. A. P.

* * *

CORRESPONDENCE

CROSS BETWEEN CANADA GANDER AND DOMESTIC CHINESE GOOSE

It may be of interest to record that I have successfully hatched two goslings which are a cross between a Canada gander and a domestic Chinese goose. They were hatched in an electric incubator, are nearly two weeks old, and doing very well (15th July, 1956). The Wildfowl Trust have no record of this particular cross and I am wondering if this is a first time ?

The history of the parent birds and some of the circumstances of the case are interesting.

A year ago a so-called " sportsman " shot a Canada goose on her nest by a Cheshire mere. On picking her up he found five newly hatched goslings. He took them home with the avowed intention of fattening them up for Christmas. Hearing of this some weeks later, I decided to save two of them from the pot and, hoping for a pair, acquired the largest and the smallest of the goslings. These were placed in my paddock with three rather older domestic Chinese goslings.

During last winter two of the Chinese fell victims to foxes and I was left with two Canadas and one Chinese.

Although the Canada geese appear to be a gander and a goose, and spend most of their time together, mating was seen to occur between the male Canada and the female Chinese. The female Canada, being immature, made no attempt to nest.

After several failures we finally succeeded in hatching the two goslings. In the young they are very similar to the illustrations of Canada goslings in *Waterfowl of the World*, and it will be interesting to see how they look when feathered.

UNDERCLIFF, 136 CHESTER ROAD, HELSBY, CHESHIRE.

A. W. E. FLETCHER.

Note.—Regarding previous breedings, A. D. Barlett (*Proc. Zool. Soc. London*, 1847, p. 50) gives a list of the species of Waterfowl then known to have produced hybrids—he includes Canada Goose × Chinese Goose. In the *List of Vertebrated Animals* (1929, p. 452), published by the Zoological Society of London, there is a note under Chinese Goose: "Has interbred with the Canadian Goose (*Branta canadensis* < *Cynopsis cygnoides*), and produced offspring in 1927 and 1928 in Kensington Gardens, London."

A. A. P.

FOOD USED IN REARING PLUM-HEADED PARRAKEETS

Dr. S. B. Kendall writes of his difficulty in breeding Plum-heads but he does not say how the birds are fed. In India young Ring-necks are easily reared by hand on parched gram flour mixed with water into a paste, the well-known suttoo, but young Plum-heads are not reared on this almost universal food but on boiled rice. When I was stationed at Karwar I was given four young of the Malabar or Blue-winged Parrakeet which the boy who brought them had tried to rear on the usual suttoo. The birds appeared in a very bad way indeed and I doubted if I could rear any of them. But I fed them on ground rice and milk sweetened with gur or raw brown sugar made up, so far as I could, on the recipe given by Dr. Amsler in an article published many years ago on the rearing of Swainson's Lorikeets. I saved two of the nestlings, which grew up into lovely birds; two of the young were too far gone to save. I have often watched wild Blossom-headed Parrakeets in Gujerat in India. They are very lovely things and far more fruit and bud eaters, at least so I have observed, than the more robust Ring-necks. I do not think it matters if the ground rice is sweetened with brown or white sugar. Indeed, I found in subsequent practice that white sugar made the ground rice less sticky and better to feed. The ground rice must, however, be made with milk into a stiff pudding, I may so describe it. I believe the right name is rice mould.

GODFREY DAVIS.

BERESFORDS,
BOUGHTON MONCHELSEA,
NR. MAIDSTONE, KENT.

FIRST IMPORTATION OF DIGGLE'S FINCH (*Poephila atropygialis*)

We have recently received from Australia four pairs of Diggle's Finch (*Poephila atropygialis*) which is also known as the Black-tailed Finch and the Black-rumped Finch, and as far as we know has never before been imported into this country.

It is a near relative of the Parson Finch and the Long-tailed Grassfinch, resembling the former in shape but the latter as to its body colour. The Parson Finch is what I would describe as biscuit-brown with a grey head, whereas the Long-tailed Grassfinch is of a very pale café-au-lait colour with a light silvery-grey head. Diggle's Finch, on the other hand, is perhaps even lighter in colour than a Long-tailed, which makes its black markings stand out very strikingly. In other respects (including its black beak) it resembles a Parson Finch, except for its slightly larger size and the fact that, instead of having a black tail and white rump, both its tail and rump are black—so, although superficially alike, the two species are really quite distinct.

Diggle's Finch, under the name of the Black-tailed Finch, figures in Cayley's *What Bird is That?* but the coloured illustration of it is rather misleading as it makes it appear to be a slightly darker shade of brown than the Parson Finch, which is not correct. He gives its habitat as Northern Queensland only, and the distribution of the Parson Finch as Queensland and New South Wales.

This is the first time we have ever had this rare species of *Poephila* at Keston and we hope to breed from them.

EDWARD BOOSEY.

BRAMBLETYE,
KESTON,
KENT.

BREEDING OF THE SENEGAL FIRE-FINCH (*LAGONOSTICTA SENEGALA*) IN CAPTIVITY

In the interesting note by Mr. C. J. O. Harrison on Fire-Finches, I am surprised to read that the Common Fire-Finch—*Lagonosticta senegala*—was bred for the first time by the Rev. C. D. Farrar in 1898. As a matter of fact this very beautiful little bird was imported into Europe in the eighteenth century, and Vieillot was probably the first to breed it. In his famous book *Les Oiseaux chanteurs*, published in 1790 in Paris, he describes the display of the cock before the hen, the nest, the eggs, etc. He adds that the breeding season is during the winter months and that a high temperature is necessary to bring up the young. Many other bird-lovers have bred this bird in France and Germany before 1898. In my opinion it is the easiest to breed of all the Waxbills, and the most charming.

J. DECOUX.

GÉRY,
AIXE-SUR-VIENNE,
HAUTE-VIENNE,
FRANCE.

* * *

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- E. A. BEST, 131 Woodham Lane, New Haw, Weybridge, Surrey. Proposed by H. J. Indge.
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- FREDERICK H. BROWN, 31 Roebuck Street, Mile End, South Australia. Proposed by Miss K. Bonner.
- KEITH D. CLARKE, 2 Barker Avenue, Tuart Hill, Western Australia. Proposed by P. M. A. Harwood.
- H. M. COOK, 62 Evans Street, Belmont, N.S.W., Australia. Proposed by A. A. Prestwich.
- J. CORBRIDGE, 47 Kenyon Lane, Moston, Manchester 10. Proposed by W. B. Frostick.
- J. C. COWAN, 41 Birdwood Circus, Bicton, Western Australia. Proposed by A. A. Prestwich.
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 ROLAND WAGAR, 4106-51 Street, Red Deer, Alberta, Canada. Proposed by A. A. Prestwich.
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The fifty-two Candidates for Election in the July-August, 1956, number of the AVICULTURAL MAGAZINE were duly elected members of the Society.

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 WILLIAM J. SHEFFLER, 4731 Angeles Vista Boulevard, Los Angeles 43, Calif., U.S.A.

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COMTE LÉON LIPPENS, Den Hul, 43 Boslaan, Knocke-Le Zoute, Belgium.
 Sqd.-Ldr. K. C. SEARLE, to Dr. K. C. SEARLE, Windsor House, Victoria, Hong Kong.

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 R. T. BLOOM, to The North of England Zoological Society, Chester.
 HYLTON H. BLYTHE, to "Bay View", 7 Clievedon Road, Thorpe Bay, Essex.
 J. E. DEXTER, to Mansdale, Calvert Road, Dorking, Surrey.
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 Dr. K. G. ROTHWELL, to 51 Lutterworth Road, Leicester.
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 F. R. WAIT, to "Thorneycroft", 17 Hillway, Woburn Sands, Bucks.
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VIEILLOT'S CRESTED FIREBACK PHEASANTS.

AVICULTURAL MAGAZINE

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AND THE AVICULTURAL SOCIETY OF AMERICA

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NOVEMBER—DECEMBER, 1956

VIEILLOT'S CRESTED FIREBACK

(*Lophura ignita rufa*)

By J. DELACOUR (Los Angeles, California, U.S.A.)

The Crested Firebacks are large Pheasants, although they are far from reaching the size of Peafowls or Argus ; but they are heavy and thickset. They have rather short, curved tails ; high, strong legs ; and both sexes possess a thick crest formed by many stiff feathers, bare on the lower half. The males are mostly metallic blue and the females chestnut-brown. As is the case with the allied Bulwer's Pheasant, the face wattles are blue. Crested Firebacks live in Malaysia, in lowland forests ; they resemble in habits the Kalijs and Silver Pheasants.

Borneo and the neighbouring islands are the home of birds in which the males have chestnut under-parts and cinnamon central tail-feathers ; but those found in the Malay Peninsula and in the greater part of Sumatra are mostly black underneath with white central tail-feathers. Only in the south-east of Sumatra are there birds with mixed black and white, or chestnut under-parts ; some cocks even have fulvous tail-feathers, differing from the Bornean race only by the paler chestnut parts of the plumage and by their shape, which is always heavier. The truth is that Vieillot's Firebacks, fine as they are, are not quite as beautifully shaped and coloured as their Bornean cousins.

The females of both are very similar, but Vieillot's hens are always larger, shorter on the legs, and their tail is chestnut instead of black. Also, their legs differ ; they are pink in Vieillot's, white in Bornean Firebacks. Finally, the eye wattles are slightly differently shaped, showing four lobes in Vieillot's and two in Borneans, and there is a small reddish spot at the lowest part of it in the former.

Crested Firebacks are easy to keep, and breed freely in the milder parts of Europe and America, such as Italy, Southern France, and California. Elsewhere they are not very satisfactory unless one provides special accommodation. Although they can stand the

winter in unheated shelters, it is better not to expose them to frost or their toes may suffer. Their worst drawback is that, in the colder districts, they come into breeding condition too late in the season, laying in July or August, so that the young hatch too late to be reared satisfactorily.

Bornean Crested Firebacks are now very scarce in captivity and there is no breeding stock at present either in Europe or in the United States, but Vieillot's have been freely imported and bred in both continents during the last two or three years.

* * *

" ' BROKEN ' WING "

By Dr. F. B. LAKE (Kingston-on-Thames, England)

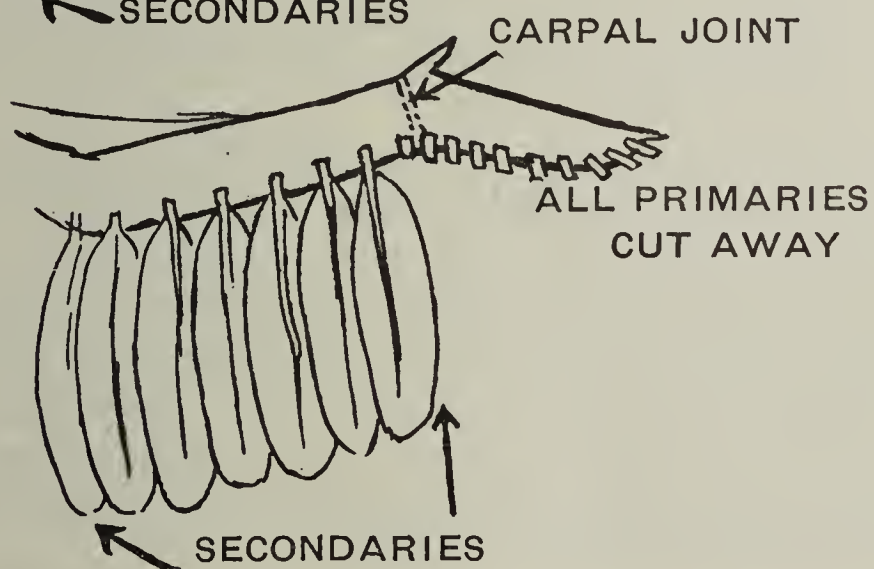
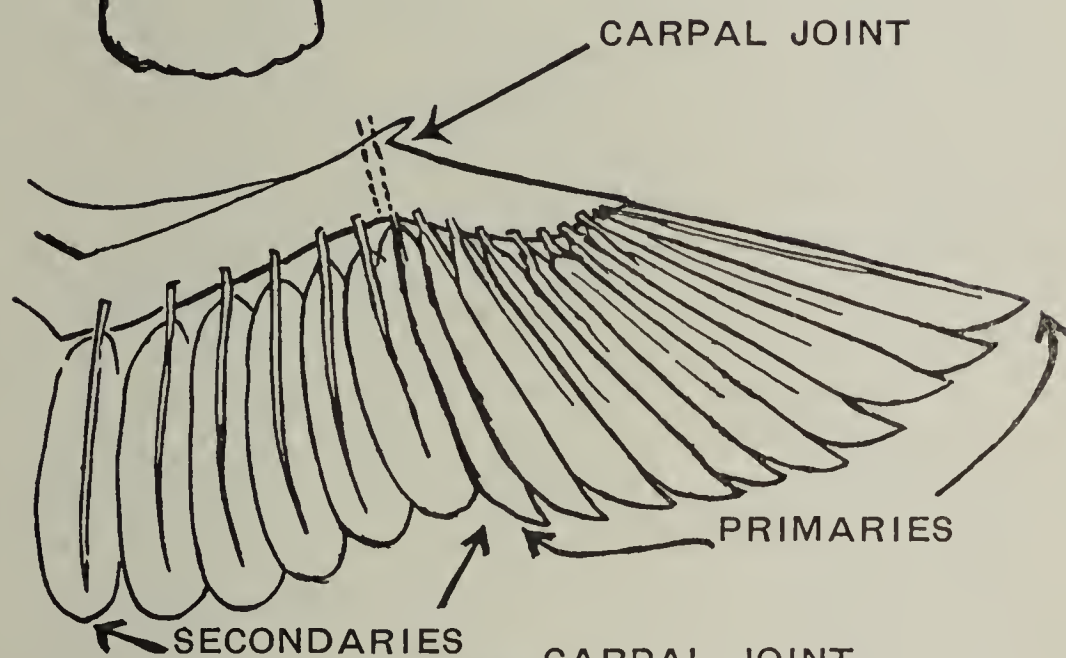
This spring, a young Blackbird, which had been rescued from a cat, was brought to me with a "broken" wing. This proved to be, as is usually the case, not a fracture but a dislocation of the carpal joint, and as it is a fairly common injury the very simple method used to cure it may be of interest.

The lateral part of the wing, with all the primary feathers, was twisted outwards, as in the accompanying sketch, and flailed about helplessly when the bird tried to fly. Examination showed that the carpal joint, supporting the terminal part of the wing which carries the primaries, was dislocated and could be moved freely in all directions.

Clearly, if this was to heal, movement must be controlled in some way, for the injured joint was wrenched violently whenever the bird tried to fly. Splinting or fixing in any way seemed hardly possible, so the experiment was tried of simply cutting off short, with scissors, all the feathers distal to the injured joint, that is, all the primaries.

The weight and wind resistance of the primaries being removed, the injured part no longer flapped about when the bird tried to fly, but moved passively with the rest of the wing and laid in correct position when the wings were folded. The bird was kept in a small aviary with a series of perches close together to form a ladder down to the ground. The wing healed in perfect alignment, and when the bird moulted and grew new primaries there was no visible evidence of the injury and flight was good.

One hesitates to write about, and illustrate, such a simple device, but all previous cases of this injury that I have seen have resulted in a permanently crippled and disfigured bird, so I thought the success of this method might be worth reporting.



BREEDING THE BLACK TANAGER

By ROY A. SCOTT (Broadmeadow, N.S.W., Australia)

My interest in softbills goes back to 1944, from which date I have read every article I could on this fascinating branch of aviculture. Unfortunately, most of them were written for British conditions and referred more to keeping in cages than breeding in aviaries. It was not till late 1951 that I first met Dr. Brown, who is a softbill breeder with years of experience. The Doctor has since taught me more than all the articles put together; admittedly he does have advantage over most of the article writers, in that he is an experienced breeder, and his birds are kept under similar weather conditions to my own.

Over the years I have kept common Starlings, Satin Bower Birds, and a few different Honeyeaters but none of what to us are the rarer softbills. Just prior to Christmas, 1953, a pair of Black Tanagers was obtained from the Doctor to see if they would go to nest in my main aviary, but that season no attempt was made. The hen was in her first year when she came into my care, and prior to her and a sister being reared that season (1952-3) their mother was the only hen in Australia. Her father is a wild-bred bird which the Doctor brought back from America in 1937, and the mother one-generation aviary-bred. The cock was one-generation aviary bred and over twelve years old. It has a split upper mandible, the result of a nostril infection, and Dr. Brown nearly destroyed him a dozen times in case it spread to other birds; fortunately he could never bring himself to do it and the cock recovered, but has a permanently damaged beak. It is now rather important, being the only fit cock bird (in responsible hands) in Australia that is not very closely related to the hens, and even he is a half-brother of his mate's mother (same mother, different father). Young from him are needed to give a slight change of blood and so allow the establishment of them more fully in Australia and not let them go the way of many other beautiful birds which were in non-breeders' hands. In view of this even the anti-breeders should realize why I am so proud at having reared young this season, even if it has no so-called scientific value.

Their aviary is 6 feet wide at the front by 9 feet deep and 7 ft. 6 in. high, 4 feet of the roof (lengthwise) is covered, the other 2 feet being open wire-netting. The front faces east and contains the door and safety porch in the right-hand corner. A privet is growing in the left front corner (under the roof), and a small shrub in the middle of the back wall (also mostly under shelter). To give more protection from the weather and provide nesting sites, a wire netting partition containing Ti-tree branches runs lengthwise down the middle from about 4 feet from the ground to the roof.

The aviary is well sheltered from the prevailing winds ; the south by the high wall of a service station and the west side boarded in, the open sides being our sunny sides. The north side has a 6 ft. high aviary adjoining it, but it provides very little shelter.

Other than natural sites, two nests were provided ; one, a wire netting cup, was placed on the back wall and little over half-way up and partly screened by the low shrub and the Ti-tree division. The other was a box 7 inches wide, 6 inches deep, and 6 inches high at front, sloping to 8 inches high at the back, with half the front open and a tin roof slightly overhanging it. This was placed near the roof, half was along the mostly open north side.

In the same aviary there are a pair of *Neophema bourkii* and a pair of self-fawn Bengalese. Feeding is upon simple lines, millet, canary seed, and hulled oats being supplied for the Bourkes and Bengalese ; the Tanagers are particularly fond of the oats and I suspect eat that of the others as well. The Bourkes get even by being the first on to the softbill mixture and also get their share of the mealworms. Softbill mixture consists of wheatmeal biscuits (ground), to which dripping and honey are added ; when fed (every morning) some finely-sieved egg (both white and yolk) is added. Bananas are fed *ad lib* and pears, grapes, apples, tomatoes, and orange are supplied, though not necessarily all at once ; other fruits are also supplied when available. It has been noticed they often tire of one fruit, not touching it for weeks ; this is particularly noticeable with bananas, but I have never known them to refuse pear no matter how much it is offered. Green food (mostly lettuce or milk thistle) and grit are also given. A few mealworms or grasshoppers are supplied but not necessarily every day, although the supply is increased as the breeding season approaches to bring the birds into breeding condition.

I do not regard live food as important as fruit for non-breeding pairs. One man, to my knowledge, keeps two cocks on nothing else but seed ; the Doctor also kept one on millet for six months (as an experiment) without any ill-effects. While they can be kept on seed I doubt if such a method would ever get a Black Tanager into breeding condition or allow it the twenty odd years' life span it can otherwise expect if properly cared for.

With the hen more matured the 1954-5 season was approached with much confidence on my part. By October the birds showed interest in both nesting sites provided and began carrying around some of the material I had supplied. Nesting material consisted of strips of palm leaves, gladiola leaves, banana leaves, broad reed leaves, and a few feathers. Black Tanagers prefer broad leaves for nesting and as a rule completely ignore finer grasses, at least that is the Doctor's experience. The Doctor's original hens built cup nests in the bushes, but this hen's mother uses a box and apparently her daughters follow

her footsteps, as both used boxes this season. The only trouble with my pair was that whatever was placed in the box one day was removed the next, with the result my hopes rose and fell from day to day and month to month.

Then on Thursday, 27th January, I examined the box to see what was in it and to my horror broke one of the two eggs laid on the bare floor of the box. I promptly built a nest, placed the remaining egg in it and to my joy the hen immediately went on and began sitting. As there were only two eggs and the usual clutch is three it was hoped a third egg would be laid the next day, and I anticipated the young would hatch in the twelve to thirteen days from then, on 8th February. Four to six mealworms were supplied every couple of hours and finally on Saturday, 12th February, when the young were sadly overdue, I examined the nest and found one clear egg. It may have been naturally clear or else stale before I discovered it and made the nest. It was at this time that I wrote to the Secretary stating my opinion on the importance of breeding Softbills and imploring others to send in their experiences as an answer to the anti-breeders. Being late in the season I hoped for, but never really expected, another nest.

The nest was left as it was and a week later, on Saturday, 19th February, the hen was again noticed sitting. No attempt was made to see how many eggs there were as I had no intention of disturbing her any more than was necessary. From the short period since the other eggs were removed I assumed she had only just began laying. At this juncture might I add that my duties as a member of the Royal Australian Air Force (even though stationed near home) involve my being away from home from 6.30 a.m. to nearly 6 p.m. Monday to Thursday and an hour or so less on Fridays. Thus my time for close observation is limited and also shared with a large stud of Border Fancy Canaries as well as a few finches. As a result I depend a lot on my wife for any special feeding during the day, as readers will realize later.

The following week there was almost continuous heavy rain and flood warnings were issued for many areas. I went to work as usual on the Friday, then without any warning was amongst the R.A.A.F. detachment that went in to do relief work in the disastrous Maitland floods which reached their peak that night. My sudden absence without any preparation or instructions on feeding a collection of over 200 birds (mostly canaries) placed a large burden on my wife, particularly as we have three young kiddies, the youngest at the time only six weeks old. Fortunately my brother-in-law helped out, or my losses would have been far greater than the few I did lose through faulty feeding, miserable weather, and general lack of attention.

On arriving home the following Tuesday afternoon the Tanagers seemed disinterested in the nest. Being in a tired condition and

probably not thinking too clearly I entered the aviary and examined the nest ; two eggs were noticed and the one examined was both dark and warm so a quick exit was made out of the aviary. Four to six mealworms were then provided every couple of hours. Each morning I was disappointed to see no apparent change in the old bird's behaviour, but as the hen was still sitting all was not lost and the mealworm supply kept up.

I arrived home about 4.30 p.m. on the Friday (4th March) to find much activity on the part of both birds, the cock displaying around the box and both begging for live food. Medium-sized mealworms were supplied and I had the satisfaction of seeing both birds feed to an extent which to my untaught mind suggested two young. Fortunately I had four days off work so I was able to give whatever young they had a good start in life.

One of the first things Dr. Brown had taught me was to disbelieve the stories about too many mealworms being harmful and sending pairs back to nest ; the trouble he assured me is *not* supplying *enough* instead of the opposite. He has reared Scarlet Tanagers on mealworms alone, but a more varied diet produces the better young ; so, provided their birds will feed with mealworms, fanciers should not worry about using them *ad lib*. On the Saturday mealworms and small grasshoppers were supplied as required from 6 a.m. till dark. Every time the parents begged for food it was supplied until they started to eat it themselves ; I would let them eat two or three, then put a couple more in the dish to make sure. In this respect I found the cock the best feeder from the start in that he fed almost everything given him whereas the hen would feed a couple then eat a couple herself. The hen came to a dish on a ledge half-way up the front of the aviary, but the cock usually begged down under the privet, so a dish was placed there and live food supplied in both. I tried them with mealworms cut in halves, but they obviously preferred the whole worms, so I saw no purpose in continuing with this practice and accepted that the parents know what is best for their babies.

Sunday dawned wet and miserable, and I was worried when they never fed by 6.30 a.m., but apparently it was only due to the dull day, as I noticed during the ensuing bad weather that they fed much later on dull mornings than on fine mornings. Live food supplied was mainly mealworms, although I did manage to get a few grasshoppers and a soaking for the effort.

With all the wet weather about (most since 1890) I was pleased that they had chosen a box instead of an open nest, although perhaps it would not have mattered as the privet is not exposed to rain. Dr. Brown's experience with open nests has been that 24 hours' continuous rain means nothing worse than the breeder catching pneumonia from the regular feeding and chasing live food, but

that the young usually succumb if the rain continues longer than that.

Monday proved a lovely day and mealworms and hoppers were supplied as required. Bourkes were raiding quite a few mealworms, but I decided it was better to let them have their share than to disturb the Tanagers by catching them out. Butterflies and small moths were offered but the old birds ignored them, although later they seemed quite fond of them.

Tuesday (5th day), another fair day and mealworms and grasshoppers were again supplied as needed. By now larger grasshoppers were being offered, but the real big hoppers were cut into half-inch lengths and only the body used.

Wednesday (6th day), returned to work so a different method of feeding was needed. My wife will not handle live food by hand, so about 100 mealworms were put into a jar and a paper funnel made to slide them through the wire into the dishes. About ten mealworms were supplied every hour throughout the day. Cut-up grasshoppers (bodies only at this stage) were put in dishes and kept in an ice chest, these were fed at 10 a.m., 12 noon, and 2 p.m., then further grasshoppers were supplied by a brother-in-law at 4.30 p.m., and more by myself at 6 p.m. I collected a fair number of grasshoppers, also a couple of case-moth grubs during lunch-time.

Thursday (7th day), another wet, miserable day with a cyclone threatening. Feeding was as the day before plus the case-moths. The weather hindered my grasshopper catching, but I managed to get a few.

Friday (8th day), the promised cyclone had moved away, resulting in a fair day with only a few showers. Feeding was as before up till lunch-time when I arrived home early, then as required. This was the first time I heard the young make any noise when being fed.

Saturday (9th day), a fine day, the best for weeks. Being away myself, feeding was carried out by my wife. Dr. Brown was good enough to come out and check that everything was going right.

Sunday (10th day), another very fine day and I managed to collect a large number of grasshoppers and these, and mealworms, were fed as required.

Monday (11th day), another fine day, my wife fed as before.

Tuesday (12th day), heavy rain started about 4 a.m. and did not stop all day. The old birds showed no interest in live food at 6.30 a.m. when I left, but the hen was still sitting. Despite the weather I managed to get a few hoppers and case-moth grubs. Both birds seemed disinterested when I came home and after the very heavy rain I was worried. Then really to make me down in the dumps the wife said they had been like that all day, leaving mealworms in the dish and only using about half the usual number. Dr. Brown

had been out and told my wife this was quite usual as they start feeding more mixture and fruit when the young are due to leave the nest ; nevertheless, I was still a little uneasy.

Efforts were made to shine a light into the nest-box after dark to see if the hen was sitting, but it appeared empty. Then, when all was given up as lost, a bouncing baby was noticed in the privet just inside the front of the aviary. A hessian screen was quickly hung on the wire to keep out wind and rain. It had left on the 12th day which actually makes it eleven days old.

Wednesday (13th day), the night proved even worse than the day it followed so it was a much relieved breeder who next morning saw his pride and joy still in the land of the living. Early search revealed only one young, also no sign of a second egg. In colour the youngster was slightly duller than the hen, also slightly smaller in body and with only about half an inch of the tail. The weather was inconsistent, alternating between bright sunshine and heavy showers. Feeding was as usual but still not so many mealworms taken.

Thursday (14th day), similar weather and feeding programme, to the Wednesday.

Friday (15th day). Good day for a change. Was amused before leaving for work by witnessing the parents trying to feed the youngster while it was sitting on a slender branch too light to take their weight. Their antics were well worth seeing until they finally persuaded it to move to a stronger perch. The feeding was as usual.

Saturday (16th day), rained during night, dull day with few light showers and a few patches of sunshine. Being home myself feeding was as required, and having collected a dozen or so case-moth grubs on the Friday, these were added to the diet and were easy favourites. Live food consumption appeared back to normal while hardly any fruit except a little pear was eaten.

Sunday (17th day). Fair day, no rain and quite a bit of sunshine. Few case-moth grubs and hoppers were fed, but for a change mainly mealworms were used.

Monday (18th day) saw a return to brighter weather with sunshine all day and temperatures were in the 80 degree mark and remained so for the rest of the week. Each evening before dark the parents were noticed persuading their baby to retire to the safety of the privet for the night. Managed to get a nice lot of case-moth grubs ; these, grasshoppers, and mealworms were fed, with a noticeable drop in the mealworms taken, the larger insects being more favoured. There was also an increase in the mixture and fruit taken, the main fruit used was pear with grapes and banana also used a fair bit, while a little rock melon was also used.

It was noticed that whereas the parents previously gave the food straight to the youngster it was now forced to tug it from the old bird's

beak, and was thus taught to start and fend for stuff. Then on Saturday, 2nd April, the hen was again noticed sitting and a mirror inspection of the nest revealed two eggs.

Sunday saw another return to the wet weather with the cyclone again threatening in the north. Up to date mostly pear was used, but from now on a sudden increase in the use of banana was noticed. More mixture was also being fed and the demand for live food reduced. The hen was content to leave most of the rearing to the cock and concentrated on sitting.

Easter was marred by heavy rain of over 1 inch per day, but the hen continued to sit and the youngster to grow.

Tuesday, 12th April. Suspected that they might have hatched judging from the antics of the old pair. I caught the young one and transferred it to Dr. Brown's and left mealworms for the usual feeding by my wife. I was worried on arriving home on the Wednesday to find that I had failed to put the mealworms in their usual spot, as a result my wife thought no feeding was required.

Thursday morning found the hen still sitting but acting as though she might have young. It proved a beautiful day and I was pleased to learn on arriving home that plenty of live food was being taken. Banana consumption had dropped to almost nil since the removal of the older young one.

Friday was a mixed day, early morning fog, bright sunshine most of the day then very cold afternoon and night. They were showing a marked preference to hoppers over mealworms when the former were available, but managed to get only a few, so they settled on mealworms. Since catching the older young one they had been very wary of me, particularly the hen.

Saturday was cold but fine ; being home and doing all the feeding myself I managed to regain their confidence—food : mealworms and grasshoppers as required.

Sunday proved a similar day to the Saturday.

Monday was again wet and miserable—my wife fed as before. Tuesday and Wednesday—cold but fine.

Thursday and Friday—cool nights but lovely days—feeding as usual except for addition of few case-moths.

Saturday and Sunday were fair days and feeding was as required.

Monday saw a few showers but mainly fine, my wife doing the feeding. One youngster flew and was greeted by one of the worst nights in weeks.

Tuesday, Wednesday, Thursday, and Friday were little improvement, but the baby showed no ill-effects—fed as usual.

Saturday was another mixed day, mostly dull with occasional showers and sunny spots.

The process of putting baby to bed was again witnessed and its two

parents were very worried until they managed to coach junior to a safe perch.

Sunday was a nice day and plenty of grasshoppers were supplied as well as a few case-moth grubs and mealworms, the only fruit used in any quantity was pear.

Monday proved another nice day and I managed to collect a lovely lot of case-moth grubs which was unusual for this time of the year.

The weather was now more settled with less rain and the feeding was continued as before, although an increase in the use of fruit and mixture was balanced by a decrease in live food used. The youngster was left with the parents for a few weeks then transferred to Dr. Brown's. These being the only two youngsters bred in Australia this season I am naturally quite proud of my first softbill breeding effort, but realize it could not have been accomplished without the assistance of my good wife and the advice of Dr. Brown. The young have proved a pair, the hen going to a friend as a mate for a cock he received from the Doctor and the cock retained by myself.

If this article should prompt some other softbill enthusiast to attempt breeding, it will have more than achieved the purpose for which it was written.

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BREEDING LAYARD'S PARRAKEETS—ALMOST BY ACCIDENT

By R. G. KIRKHAM (Clonskeagh, Co. Dublin, Eire)

Early last December, I was fortunate enough to receive direct from Ceylon an excellent young pair of these small, but very attractive, Parrakeets. They were closely confined for the long sea voyage, and appeared to have been quarrelling. However, a long rest in a spacious indoor compartment soon put them right, and as the days grew longer they were given opportunity for outdoor flight, and a chance to bathe in the rain—all of which helped their appearance and condition, if not their temper. The cock was not a friendly bird, but at least I could tempt him to examine a peanut at close quarters, while the hen if offered a nut would go for the finger holding it instead, and shriek with annoyance if she missed.

In due course May arrived, and practically every compartment capable of holding a breeding pair was filled, and so, not bothering very much about the Layard's as a breeding possibility, I parked them in a rather small compartment measuring about 8 feet by 6 feet by 3 feet, with a small shelter attached and furnished with a grandfather clock nest-box partly filled with turf-mould. To my surprise, the

hen became very interested in the nest-box and spent quite a bit of time in it. On several occasions, mating was observed early in the morning, usually about 7.30 a.m., and about the end of the month two eggs were laid. The exact dates could not be ascertained as the hen became such a little fury and would not permit anyone to enter the flight. In fact, on the only occasion that the eggs were seen, the hen had to be caught up, and this seemed to upset her very much, so it was not repeated. As I have said, two eggs were laid, and these were exceptionally large for the size of the bird, being if anything bigger than a Ringneck's. Accurate hatching time could not be observed, though the young were heard but not seen early in July. The hen did all the feeding, and at times she even fed the cock. She consumed large quantities of spinach, but especially the stalks, also apple and unlimited quantities of sunflower and peanuts. Spray millet was provided, but not touched, but soaked hemp was greedily taken and very quickly eaten, though only given sparingly about once a week. Towards the end of July, the cock joined in the fun, and instead of acting only as watchman, started to feed the hen, and would I think have fed the young had he been permitted, but the hen would not allow him to put a foot inside the nest, and only permitted him an occasional and hurried peep through the entrance hole. The first youngster left the nest on Sunday, 26th August, in a downpour, and as it could not fly, I spent a great deal of time catching up the spitfire and then replacing her offspring in the nest. To-day's date, 6th September, and the second youngster has not yet ventured forth though it has peeped out and been on the verge, but to tell the truth I do not think it is very impressed with what the outside world has to offer it—rain and still more rain. Can't say I blame it !

Footnote.—The two youngsters have the same cherry coloured beak as the cock, though not so bright, and I understand this changes to black with the first moult, which if the birds are hens stays black, but if cocks changes back again to cherry red.

8th September.—The second youngster finally ventured out to-day. The sun made a brief appearance and so did he (or she). Both young birds are being constantly fed by the hen and admired by the cock. I think he is very proud of his offspring who are already nearly as big as he is, and will I fancy be even larger in a few weeks time.

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BREEDING OF THE REGENT BOWER BIRD

By Dr. R. E. B. BROWN (Newcastle, N.S.W., Australia)

For some years I have been trying to breed the Regent Bower Bird and up till last summer I have always had to remove the cock to save his life before any nesting operations could occur.

I have watched these birds, both in the wild state and in captivity, for over twenty years and have come to the conclusion that in the wild state there is very little association between the sexes. The hens go about together, the cocks also, but very rarely the two sexes together. When one sees what looks like a pair in the rain forest, it is nearly always a mature cock accompanied by an immature one.

A friend and I watched an incident a few years ago that showed this very plainly. A flock of fourteen Regent hens had taken possession of a large, wild fig tree which was covered with ripe fruit, and used to stay in this tree all day. They took no notice at all of the numerous Lewin's Honeyeaters and Zosterops that were also in the tree all day, or of the flock of eighteen immature King Parrakeets that visited the tree several times daily. But as soon as a cock Regent appeared they would attack him with the greatest ferocity.

A flock of eight cocks used to raid the tree every morning about 8 a.m. and try and grab a few figs. The hens always attacked them at once. The cocks approached the tree at all angles, but they always escaped the same way, by dropping to near the ground and flying through the undergrowth pursued by the furious hens. Some of the cocks would be holding a fig in their beaks, and so intent were they on escaping, that one day one of them almost brushed against me as I sat under the tree.

The cocks *always* have a place where they dance. Sometimes this is merely an area under a tree swept clear of all leaves, etc., but sometimes they build a bower there. I think that when a hen wants to be fertilized she visits the cocks at this place, and I believe that in my aviary the hen visited the cock when he was dancing under the broad-leaved rain forest tree.

My hen Regent lives in an aviary 25 feet long, 15 feet broad, 12 feet high. At one end is a large privet tree, at the other end is a broad-leaved tree from the rain forest (name unknown). There is no other shelter provided.

All my softbills get the same basic food, a soft mixture I make, consisting of crushed wheatmeal biscuits, to which honey and melted beef dripping are added. Each day I add to the daily ration fresh grated hard-boiled egg. Fruit, such as apple, banana, pear, tomato, orange, paw paw, mango, and grapes, when in season, is provided. They also have white ants (termites) daily, and mealworms, grasshoppers, and

case-moth grubs, when available. It is absolutely *essential* to give all Bower Birds plenty of green food, otherwise they take fits.

15th October, 1955.—Hen Regent Bird noticed crooning to herself to-day and pulling at pieces of stick in the privet tree (I have had this bird 5 years).

16th October, 1955.—A fully coloured cock bird, caught exactly one year ago, was put in the aviary with her to-day, careful watch being kept to make sure she does not kill him at once, as usually happens.

18th October, 1955.—The hen Regent is tolerating the cock. He is very frightened of her, as they always are. Anyhow she has not killed him yet.

20th October, 1955.—Saw the Regents eating white ants out of the same tray. I take this as a very hopeful sign. She is crooning a lot and placing a few sticks in a wire fern-basket. He is still very frightened of her, but he seems to be fairly happy as he displays to the cock in the next aviary and I have heard him dancing under the broad-leaf tree. But he has not attempted to build a bower, as he is too frightened of the hen. He had a nice bower in his previous aviary, where there were no hens to terrify him.

10th November, 1955.—The Regent hen has built a very sketchy nest in the fern-basket, but I have seen no association with the cock. In fact they spend most of the time at opposite ends of the aviary, she just tolerates him and that is all, but the fact she has not killed him is hopeful.

29th November, 1955.—The hen Regent laid early this morning. It is quite easy to see the egg, and to watch all her behaviour, through the bottom of the nest. I don't expect the egg to hatch, as I have never seen any association with the cock at all. She now will not allow him to go down to the end of the aviary, where the nest is situated, at all and he is very frightened of her. She does not interfere with the other birds in the aviary at all. There are a pair of Maroon Tanagers who have a nest within 10 feet of hers. A pair of Madagascar Weavers, a pair of Magpie Tanagers, and a young Olive-backed Oriole are also in the aviary.

The egg is fairly large, slightly larger than a domestic pigeon's egg. She is sitting very closely. She alights on the side of the wire basket and very carefully and gently gets down to the bottom of it, gently lowers herself on to the egg and then takes it right in under her feathers.

When she is properly on the nest I cannot see the egg at all. She displays great affection for the egg, crooning to it nearly all the time, especially when she is turning it over. She has only laid the one egg, though it is customary to lay two eggs in the wild state.

9th December, 1955.—I heard a lot of noise in the aviary this morning and found the hen Regent killing the cock. She had him down in a

corner and was definitely killing him, but I just came in time to save him. I opened the door of the next aviary and he quickly flew through and hid under a bin. He was so terrified he remained hidden all day, but he was not badly hurt.

15th December, 1955.—The hen Regent is still sitting closely, coming off to feed three times a day, has a bath, then hurries back to the nest.

20th December, 1955.—This afternoon to my astonishment the hen Regent hatched a young one. It is surprisingly large, being almost as large as a small domestic chick. The eggshell is still lying in the nest. The hen fed the young one first with a soft mealworm pupa. Then she refused more mealworms and pupae so I offered her a small case-moth, this she eagerly accepted, mashed it up thoroughly for about ten minutes, took it to the nest, and fed the young one with it from her beak. She is very affectionate to the young one, crooning all the time she is feeding it. The young Regent is covered with rather long greyish down and that is why it seems so large. She has not touched the white ants yet. I suppose they are too small.

The Maroon Tanagers have two young ones 10 feet from her, but she has not interfered with them at all. In fact the hen Tanager stole a case-moth from her while she was mashing it up and fed her own young with it.

21st December, 1955.—The Regent hen has begun to feed the young on white ants. Her method is to collect a large number of ants in her beak and throat, roll them into a ball mixed with much saliva, then give them to the young one. When she moves her beak away from the young one you can see strands of saliva stretching from one beak to the other. She is also quite definitely feeding by regurgitation as well as by the beak method.

22nd December, 1955.—This morning I went out to the aviary at 6 a.m. The hen Regent was hanging on the wire begging for live food and I gave her a case-moth. She took it up to the nest, dropped it, grabbed the young one by the head and flew off with it. She dropped it at the other end of the aviary. When I picked it up it was still alive although it had a wound right through its head. I have preserved it in spirit.

All the rest of the day the hen has been taking food up to the nest, crooning and obviously looking for the young one and does not seem to know what she has done.

Two weeks later I put the cock back but she immediately attacked him and I had to take him away. I have placed him in the next aviary to hers and he has built a nice bower under the *Bougainvillea* vine. I hope to try again next summer.

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BREEDING PAINTED QUAIL

By WALTHER LANGBERG (Copenhagen, Denmark)

Having bred the Painted Quail for a number of years with reasonable success, it occurred to me that my experiences as recorded in the following notes might be of interest to other aviculturists. The exceptionally warm summer of 1955 was particularly favourable, when four pairs reared no less than fifty-two chicks, all these young being fully reared by the parents without resort to incubators or foster-parents.

HOUSING

Each pair was kept in an outdoor aviary 10 feet long by 4 feet wide by 7 feet high. Three feet of the length was devoted to the shelter and the open flight was accordingly 7 feet long. The entire floor was raised above ground level about 15 inches and was made of 1-inch boards covered with "Carbolineum". Approximately half of the outside flight was covered with glass. A skirting board about 9 inches high surrounds the bottom of the flight to act as a windbreak and to prevent the chicks from passing through the $\frac{1}{2}$ -inch netting, which they can easily do. Each of these aviaries housed one pair of parrakeets in addition to one pair of quail—Rosellas, Stanleys, Crimson-wings, and Bourkes respectively. In no case did these birds interfere with the quail, but this happy state of affairs was not achieved in a flight with a pair of Masked Lovebirds as companions, and one cock quail was so badly damaged by the Masked that it was lost.

NESTING

Provisions for nesting were very simple. In one corner of the shelter a low wooden frame about 5 inches by 5 inches by $1\frac{1}{2}$ inches high was placed and firmly held in position by two bricks. The frame was partly filled with sand, and fine hay and coconut fibre were provided as nesting material. From these the birds build a partly-covered nest in which the eggs are laid.

INCUBATION

Many hens are inclined to lay their eggs all over the place, or to scatter them around after laying before they eventually decide to lay in the nest; some hens, indeed, never seem to settle down to serious nesting operations and continue to lay their eggs broadcast. The first step to successful breeding is to secure a hen that is a good sitter and rearer. The probable reason for this unreliable behaviour may be that the hens are either too shy after recent importation or are from an aviary-bred strain raised for some generations by artificial methods, such as by fostering or in incubators, practices commonly

employed by some continental breeders. There are, however, good and dependable breeding strains which have been well managed for generations and trained to rear their young entirely on their own in captivity, and these are decidedly the best birds to acquire.

The period of incubation is about seventeen days. This, in my experience, is subject to some slight variation, sometimes taking a day or two longer ; possibly the external temperature or other conditions may have some influence. In any event, no good can come from trying to rush matters and the hen should be left quietly alone for a few more days, to be on the safe side, if the chicks do not appear on the anticipated date. It is also a difficult matter to estimate exactly the precise date upon which incubation proper commences. It often happens, too, that as soon as the first youngster hatches and leaves the nest the hen follows it and allows the remaining eggs to become chilled and spoilt. This is of more frequent occurrence when breeding indoors rather than in an outdoor aviary.

In early days the hen usually broods the young very closely, covering the minute little creatures—only about the size of a bumble bee—almost continuously. At this stage they are liable to die if away from their mother for only a few minutes. Care must therefore be exercised to ensure that they do not become trapped in feeding vessels from which they are unable to extricate themselves. It is a good plan to remove all such utensils out of reach of the young for the first week, although water should always be available in very shallow receptacles. In order to prevent the chicks becoming unduly wet, a small feeding pot may be placed upside down in the water dish thus leaving only a small area available for the birds to drink from. Small plastic water fountains might be used, but they should be fixed firmly to the wall or floor. Many individual cocks give considerable help in rearing the family and often brood them just like the hen ; others, however, often ignore the young or even kill them. It is therefore essential to observe an untried male and watch his reactions to the arrival of young—if necessary he must be removed.

FEEDING

Quail are mainly fed on small millet, blue maw seed, millet sprays, egg food, milk sop, an occasional mealworm, and, in season, plenty of greenfood—preferably chickweed. They also have sprouted millet and oats throughout the year. The floors of the aviaries should always be well covered with good clean sand as quail, like all gallinaceous birds, are very fond of a sand bath. There should always be a constant supply of eggshell, oyster shell, and fine grit. Proprietary condition seed mixtures frequently contain a proportion of wild seeds which are particularly appreciated by quail. Seed is preferably scattered

broadcast on the floor as the birds prefer this to seed pots. Egg-food and milk sop are supplied in small, flat pots.

When the chicks are newly hatched they should be fed for the first few days on blue maw, and all other seed should be crushed and scattered on the floor with a little of the egg food. If fresh ants' eggs are available they are, of course, the best food of all for small chicks, but they are not essential. Personally, I have never used them. Tiny mealworms, only the thickness of a needle, are also relished in the first few days. The chicks soon learn to take larger worms if given these thin ones to start them off. The chicks grow very quickly and at three months have usually moulted out and look exactly like their parents.

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CONTROL BREEDING OF THE GREY WAGTAIL AND NOTES ON A MIXED COLLECTION

By Rev. J. R. L. LOWE

(Coln St. Aldwyns, Cirencester, England)

The gremlins that delight to add grey hairs to aviculturists are not always malevolent. They even allowed two young Grey Wagtails to leave the nest on 7th July—it might have been 7th May if I had not made a ridiculous mistake.

In May, 1955, I had reared two young Grey Wagtails, hoping one at least might be a mate for a 1953 hand-reared cock. In the autumn I gave one away in exchange and kept what I thought was a hen. By March, 1956, this bird had developed a solid black bib, and as it was also a good colour I was certain I had a young cock. Then in mid-May, this young bird began to carry bits and pieces to a ledge in its aviary, but even then I was not persuaded, as when I turned the old cock in there was a good deal of sparring, if not fighting, and as they are good at killing each other in a comparatively confined space I did not leave them together. However, in mid-June I was pushed for room and I put them in a large, planted aviary that has a shelter; in this aviary there is a cock Redstart, a pair of Goldfinches with a large young one and some small second-round babies, four May-hatched Bullfinches, a hen Canary with two mules by the Goldfinch, a 1956 Golden Pheasant half-grown, a hen Lazuli Bunting and a hen Siskin. The two Wagtails agreed to differ, and after a little mutual display each had its own corner and I paid little attention to them. On 7th July I went into the shelter and on a shelf moved a small travelling box. Imagine my amazement when inside was a typical Grey Wagtail

nest containing two babies almost ready to leave. I shall never know how many eggs there were, or how many hatched.

Live food in the form of gentles and mealworms had been given, but not as generously as one would have given if rearing young. Soft food reinforced with egg was always there, as the Goldfinches and young Bullfinches eat a lot of it. To date, 10th July, the two young Wagtails are running about the shelter floor and they go into their nest-box as it is now placed on the floor. The old birds feed the babies at my feet and soon, I hope, they will all go out into the open part of the aviary.

The *Handbook of British Birds*, Vol. I, p. 223, states that the female (in spring) has "whitish throat, without or only obscurely marked with black". This hen has a solid matt throat and bib and quite strong yellow underparts. The cock has begun to display again, but it is late for a second round.

A pair of Bullfinches have been madly prolific. Two clutches of five, eight reared.

Early summer produced hot, dry days and bitter nights, and a lot of eggs were infertile from hybrid pairs. A trio of Golden Pheasants have laid solidly from April to July, and while giving at least two dozen eggs away we are rearing a dozen at different stages. Bantam mothers are the only answer, and in the early stages we do best with some live food.

A pair of Redrump Parrakeets, 1955, have had two clutches of five, and no sign of fertility. Gremlins in real form!

A Lesser Double-collared Sunbird sent to me last October, in a very poor state, was put outside in May and has had a wonderful moult, and though we could not keep the lovely red, the new feathers are quite orange, perhaps because of all the live food he spends so much time catching.

A young Amethyst cock out of colour is also benefiting from outdoor treatment and the colour is coming fast; he is peaceful in a mixed collection with one other softbill, an Orange-georgetted Flycatcher. The Double-collared is hopeless with anything smaller than a Golden Pheasant.

A pair of Sulphury Tyrants have moulted well since being put out; they live quite amicably with Necklace Doves. They have trying voices and I doubt if they could be trusted with small birds.

A pair of Diamond Doves are, I think, possessed; they must have laid at least five pairs of eggs, and so far have nothing to show for it. Sometimes the nest is ridiculously flimsy; on another occasion, as the eggs were chipping, the cock started to drive the hen to nest again and that was that. At the time of writing, 10th July, she is actually sitting on two eggs on a fairly respectable nest.

Last year I wrote a piece about the hybrid Turtle/Barbary and

Barbary/Turtle Doves. In February we liberated a cock Barbary, a cock Turtle/Barbary, two Barbary/Turtle hens, a Turtle/Barbary hen, and a Turtle/Barbary/Barbary hen (second generation). Up to 10th July rather surprisingly no casualties, though birds reported often two miles away ; but all come back to feed.

Turtle/Barbary and Barbary/Turtle nested in the garden, produced one youngster, a rather dull brown colour ; this is occasionally seen, but seldom comes to the feeding place which is on top of an aviary. This pair may have big young ones as just in the last few days they have been appearing together. The Barbary cock and Turtle/Barbary hen are sitting somewhere in the village, and Turtle cock released in June has paired to his granddaughter, the second generation hybrid hen. This pair is now sitting somewhere.

All the doves are at the moment living chiefly off the country and do not all come regularly to the feed table ; but later perhaps when food gets shorter and the leaves begin to fall we shall be able to see what the 1956 crop has produced. The question is, will these hybrids tend to migrate ?

We have discovered a new way of increasing our Sunday School attendance ; "Joe" is a large Indian Hill Mynah and his vocabulary is prodigious. Every Sunday he holds court after Sunday School, as he adores children, and there is much competition to see and hear "Joe", consequently numbers have gone up considerably.

An attempt to produce hybrids between an Indian Jungle Fowl cock and a hen Mongolian Pheasant has failed. Some seventeen eggs were duly tested.

Two hen Greenfinches have each laid twenty-four eggs, with no result earlier on, paired to a Canary and Goldfinch respectively. To-day, 10th July, they are sitting each on six eggs, and at last there is some fertility.

As I finish this rambling account of frustration and a little success, "Joe" is coughing and sneezing like a very old man and occasionally producing a wolf-whistle of extreme vulgarity.

* * *

BREEDING OF THE BLACK-BREASTED PLOVER

By H. A. GERRITS (Manager of the Wassenaar Zoo, Holland)

The Black-breasted Plover (*Zonifer tricolor tricolor*) belongs to the genus *Zonifer*, which is a representative of the family Charadriidæ. Its native country is Australia, where it occurs in Queensland, New South Wales, Victoria, Tasmania, and South Australia.

In order to give an impression of the appearance of this bird to those readers who have never had an opportunity of seeing it alive, I will quote Gould's colour description after which, with the aid of the photographs, everyone should be able to get an idea of the appearance of this Australian plover.

Adult Male.—Crown of the head, line running from the angle of the mouth beneath the eye, and down the sides of the neck, and a broad crescent-shaped band across the breast, jet-black; line from the eye to near the occiput, chin, throat, flanks, abdomen, upper- and under-tail coverts, white; back, light-brown; primaries, brownish-black; wing-coverts, bronzy-brown passing into black towards the tip of each feather and tipped with white; a few of the outer secondaries white, margined on the extremities of their outer webs with black, then a few entirely white, and the last two marked like the coverts, but largely margined with white; scapularies and lower part of the back, bronzy-brown; rump dark olive, with bronzy reflections; tail, white, crossed near the tip by a broad irregular band of black; tip of the upper mandible, horn-coloured; the remainder of the bill, beautiful primrose-yellow; naked parts of the sides and knees, dark pink; tarsi and toes, blackish-brown, the latter inclining to pink-red; irides, yellow, surrounded by a rim of deep primrose extending in an oblique direction to the flashy protuberance at the base of the upper mandible, which is blood red in the male, much lighter or flesh red in the female.

Otherwise the sexes are alike in colour, but the female has the lobe before the eye much smaller than in the male.

On 9th May, 1953, a pair of Australian Plovers arrived in the Wassenaar Zoo. The condition was quite good after such a long journey and, after the birds had been thoroughly accustomed to their food, they were put into one of the large centre aviaries of the Louise Hall. This 24 ft. × 27 ft. × 13 ft. aviary, with its elongated pond, trees, and shrubs and thick lawn, is certainly an ideal place for this Black-breasted Plover. The *Zonifer tricolor* were, of course, not the only occupants of this spacious aviary and they had to share it with numerous other birds, such as Senegal Bustards, Sun-Bitterns, several plovers, and many pigeons and doves. The Australian Plovers feed—at least in this aviary where, owing to the very mixed population, a great variety of food is available—mainly on universal food, insects,

mealworms, and dried ant cocoons; they take a small piece of minced meat or bread occasionally, but no seeds. Although the Plovers were surrounded by so many different birds, they behaved very amiably. They mostly kept to themselves, taking no notice of the other birds; they never quarrelled and were always seen in each others' company. When one of the other birds approached them too closely they drove it away by noisy cries and wing-beats. If this method failed, with a much bigger opponent, for instance, they vanished from its neighbourhood together.

On the other hand, I cannot say that they reserved a certain part of the aviary as their own domain. They moved freely and undisturbed through the entire aviary and I noticed that the other birds did not hinder them at all. This may lead to the conclusion that the Plover is a quarrelsome or unsocial bird. On the contrary, when the keeper brings in the food and gives them their daily supply of mealworms and insects they eat together with all the other birds without fighting or trying to obtain more by chasing the others away. For company, however, they keep to themselves and birds of another species or genus do not appeal to them. From the outward appearance of our Australian Plovers it was already obvious that we had a male and a female—namely, the birds had a clearly-visible difference in the lobes before the eyes, the lobe of the male being much bigger and more vividly coloured than that of the female. After a few months the birds were in excellent condition and with their beautiful colours and smooth and silky plumage they were really a very welcome addition.

During the years 1953, 1954, and 1955 the birds had not made any breeding attempts and not a single egg had been found in the aviary. In the middle of the month of February, 1956, however, the behaviour of the Australian Plovers changed remarkably although outside the Louise Hall the temperature was about $-20^{\circ}\text{C}.$; they were continually seen near the entrance door of the aviary and they kept even more closely together than they used to. On 18th February the birds occupied a spot close to the entrance door near the dividing wire-mesh between the aviaries, for the whole day. The female was very busy turning around with her breast to the ground or shuffling in a sitting position as if she wanted to examine her work. In this way she soon succeeded in making a somewhat shallow, but beautifully rounded, hollow in the ground, which was rather stony. Owing to frost, night temperatures in that unheated part of the Louise Hall were under $6^{\circ}\text{C}.$ The male took no part in these activities but remained always very close to her and took care that every inhabitant of the aviary who came near her was kept at a proper distance.

No nest material was available in the aviary during that time, so the little hollow was not lined at first.

On 20th February, in the morning, I saw the first egg lying in the hollow. Neither of the Plovers was on the nest but both did all they could to keep intruders from stealing or damaging the precious egg. As both Bustards and Sun-Bitterns in their own aviary, as well as the Hunting Cissa from the adjoining aviary, were very interested in the egg with the obvious object of eating it, the future parents had an almost impossible task. I therefore decided to give the Plovers a helping hand and, with violent objection from the owners, took the egg away till we had made sufficient protection. We then placed a screen of fine wire-mesh around the nest, so that we made a sort of separate little aviary of 6 ft. \times 2 ft. \times 3 ft. in the large aviary and placed the water and feeding vessels in it. After we had put some fine dried grass on the ground we returned the egg in the hollow and the Plovers could again take possession of their new home. It was a thrilling moment for it would soon become evident whether our intervention had disturbed their breeding urge or the birds would continue to take interest in their nest. Fortunately, the latter turned out to be the case.

The female was now very busy lining the nest with the dried grass during the whole day. The male did not join her in these activities but with loud cries flew at all birds who approached the wire-mesh of his new aviary too closely. On the following day (21st February), also, both birds stayed close to the nest although they did not start incubating. On 22nd February the second egg was laid and on 23rd February there were three eggs in the nest-hollow and the behaviour of both birds did not change; they remained near the nest and objected very loudly to everything which approached too close for their liking. This continued until 26th February. When I entered the Louise Hall in the morning of that day the female was—contrary to the preceding days—sitting on the nest and the male was, if possible, more aggressive than before.

I stayed nearby for a long time and at last, when the female left the nest for a very short time, I had the opportunity to look in the nest-hollow. There were now four eggs in the nest, lying with points all towards one another. As soon as the female left the nest the male took her place until the female returned and gently pushed him off it.

Before giving a further account of the breeding, I will first give a more detailed description of the eggs, as follows: ground colour light olive-grey, very thickly blotched and stained with brown and reddish-purple, so as nearly to cover the surface, particularly at the larger end. The axis measures 42–44, diameter 30–31.

We took 26th February as the beginning of the incubation period. Both birds were alternately sitting on the eggs, although the female did most of the brooding. We observed that the birds continually tried to push each other from the nest, each being very eager to get

an opportunity to incubate the eggs. This continued for some time, and on 22nd March I saw that one of the eggs was damaged, but after we had very carefully taken it away it proved to be clear. On 24th March, after an incubation period of exactly twenty-eight days (this being the same period as stated by Mathews), one egg was hatched. The young bird at first stayed under the mother, but later in the day was seen several times in the little aviary.

The birds continued to incubate the two remaining eggs. On 25th March, however, one egg disappeared, to our great astonishment, and on 26th March the last egg disappeared also. I did not find a single bit of these two eggs in the aviary and I am therefore quite unable to give a reasonable explanation for their disappearance.

Plate I shows the Black-breasted Plover sitting on the nest, a couple of hours after the hatching of the egg, with one of the eggs showing in the nest-hollow under the female's breast. The following is the description of the young Australian Plover in nestling-plumage :—Yellowish-brown on the upper parts with indistinct spots of sandy buff; forehead, sides of crown, and nape covered with black and buff down; a narrow white line under the eye, continued over ear-coverts and broadened around the back of the neck; ear-coverts, pale brown; throat, abdomen, and sides of body, white; tail composed of down, blackish, tipped with white.

The young bird did very well and took its food, consisting of a good insectivorous food, rusk, and egg mixed with dried insects, quite excellently. It proved to be very fond of mealworms, which at the beginning were cut into small bits but were very soon given normally, and the agile little youngster took nearly the whole supply of them, although it must be said that the parents let him have it. During the night the young bird slept under the female in the nest-hollow. By day he frequently sought protection under one of his parents, being then absolutely indifferent whether it be the male or the female. Anyhow, it must be said that both birds were excellent parents who looked after their youngster with great care. During the first days especially, the youngster grew very fast and moved about very quickly.

Plate II shows how the young Plover has already grown after four days and is selecting its food with much care.

On 15th April I noticed that around the wing-butts the first coloration in the white appeared, on the spot where with the adult bird the white is changing into black. There was no further colouring to be seen. Bill and legs were still plain lead-grey and the yellowish-brown colour on head and back was nearly unchanged, although on the wings the quills were already showing. About a week later, on 24th April, the definite colour pattern on the breast could clearly be seen. The whole coloration was somewhat brown instead of black



[G. W. Louwman

PLATE I. BLACK-BREASTED PLOVER ON NEST.

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To face p. 222.



PLATE II. YOUNG PLOVER FOUR DAYS OLD SELECTING FOOD.



Copyright]

[G. W. Louwman

PLATE III. YOUNG PLOVER SIX WEEKS OLD.

To face p. 223.

but it was now easy to see which parts would remain white and which would ultimately become black. The colours of head and back changed also and became rufous-brown instead of yellowish-brown, while the little cap on the head was now clearly marked by a dark rim. On 3rd May the young bird had already attained three-quarters of its ultimate size, and Plate III gives a good picture of its appearance at that age. The temporary mesh-wire protection in the large aviary was now taken away and the Australian Plovers had again the entire space at their disposal.

On 9th May I saw the youngster for the first time on the wing and noticed now very clearly that the tail-coverts and the primaries were brownish-black.

On 12th May the lobe between the eyes and the base of the bill began to show. The colour of the skin here is very difficult to define, but in my opinion it is greyish-beige. At the time of writing, 16th May, the youngster is nearly the same in appearance as the adult bird, only it is somewhat smaller; the colours are much paler and consist merely of different shades of brown. The yellow rim around the eye is missing as well as any colour in the bill and legs, which are still lead-grey.

Now, at the age of fifty-four days, the youngster behaves completely as an adult bird and the family relationship is no longer shown. The parents keep each others' company as usual, but they take no notice of the youngster. The young bird, in its turn, leaves its parents alone and moves quite independently about the aviary. Also, towards evening it does not seek the company of its parents but finds itself a suitable place to go to sleep.

* * *

DARENTH-HULME, 1956

By KAY BONNER (Southgate, England)

The coldest, longest winter in living memory was followed by the wettest, most sunless summer of this century. Little wonder then that recorded breeding successes are few and far between. With us it has certainly been the worst season we have ever experienced.

Our main activity in the early part of the year was the construction of a large, planted garden aviary. This measures 54 feet by 22 feet, and is 7 feet high. It was well-planted with a fine assortment of ornamental flowering shrubs, evergreen bushes, and climbing plants, but the incessant rain encouraged the growth of weeds to such an extent that the whole lay-out was very quickly turned into a veritable wilderness. This was not what we had planned but the birds simply revelled in it, which is, of course, the important thing.

The first birds were put in in mid-April, a small selection of British birds—Siskins, Redpolls, Linnets, Bramble Finches, Yellow Buntings—followed, as the weather permitted, by numerous reputedly hardy and half-hardy exotics. At present there are about 120 birds, mostly in pairs, enjoying life to the full. The principal are Egyptian Plover; Jackson's, Delamere's, Paradise, and Yellow-shouldered Whydahs; Common, Bank, Malabar, and Siamese Crested Mynahs; Chinese Silky, Amethyst, Purple-headed, and Green Glossy Starlings; Rosy Pastor; Natal Robin; Black-headed Sibia; Kurrichane Thrush; Rufous-throated Babbler; Red-crested and Virginian Cardinals; Oregon Towhee; Junco; Golden-breasted Bunting; Peaceful and Talpacoti Doves; Jobi Island Pigeon; California and Chinese Painted Quail; and many weavers, waxbills, etc. All live in perfect amity except when the starlings or mynahs are attempting to breed, then the Common Mynahs become swaggering bullies. The Purple-headed Glossy Starlings and various mynahs have had numerous nests; young have been hatched but none has been reared beyond about ten days. The Chinese Painted Quail have reared young, otherwise the only natural increase has been through the agency of Zebra Finches, quite a small flock having been reared.

In the main aviaries the breeding results have been exceedingly poor, probably the less said about them the better. But our very reliable pair of Pennant's made amends for the shortcomings of other pairs by, this year, excelling themselves in that they were double-brooded, rearing nests of three and one; the young, as usual, leaving the nest in full adult plumage.

The chief inmates of the various aviaries are very much the same as recorded last year, with the exception that the Red-bellied Conures were transferred to Mrs. G. T. Clark's collection and there were new additions in Greater Patagonian Conures from Foxwarren Park, Finsch's Conures, and Alexandrine Parrakeets. The Lineolated Parrakeets stood the cold fairly well, but there were several losses in the early spring; another unfortunate loss was the hen Jobi Island Pigeon which was found dead on eggs.

The Budgerigars in the escape passage in front of the aviaries have bred exceedingly well. Whereas last year we had many "runners" this year, without exception, all the young have been fine, robust birds. The Java and Barbary Doves have bred to such an extent we have had to remove dozens of eggs. During the winter we lost four Javas but no Barbarys. Crested Bronze-wings and Bronze-wings have reared several pairs of young ones. The fifteen Buffalo Weavers, reputed to be a very hardy species, failed to live up to their reputation and all died at intervals during the course of the winter.

The colony of Red-faced Lovebirds started the winter twenty-six strong, and to our very great surprise only two were lost, and the

colony at present numbers twenty-six. Towards the end of October there is always considerable activity when they clean out their nests. Amongst the debris we find numerous eggs and fragments of eggs. In the spring we supply new peat-filled nesting-barrels and when the old peat is broken up we usually find other abandoned eggs, making a total of at least twenty. No young have yet made their appearance this year.* Last year we thought the very excellent summer might have been to their liking, but such was not the case ; this year we hoped the wet conditions would suit them, but seemingly they are still not satisfied.

The range of aviaries built specially for the Fruit Pigeons are now tenanted by the six couples of Pied and Green Imperial, so kindly accommodated by John Yealland at the London Zoo for nearly two years. No attempts have been made to breed. We find them extremely difficult to sex and we rather fear we have couples rather than pairs. Green Imperials are not recommended to anyone likely to have neighbour-trouble. Their call is a deep, resounding boom, which has been likened to the croaking of a bull-frog. True, it is uttered at considerable intervals ; we like it, but some people are annoyed by even the gentle cooing of doves !

During the past month or so we have rebuilt the pheasant runs and are now in process of reconstructing the pigeon and bantam pens.

The bird-rooms continue to house many and varied parrakeets : Nobel Macaws, Senegal Parrots, Meyer's Parrot, Black-headed Conure, Canary-winged, White-winged, All-green, Tui and Tovi Parrakeets, Turquoise-rumped Parrotlet ; nine White-bellied and three Black-headed Caiques, a Greater Hill Mynah, and a couple of dozen Red-faced Lovebirds. The house parrots consist of a pair of Greys, a Brown-headed Parrot, and White-bellied and Black-headed Caiques.

Finally, mice. Last year at one time we were literally overrun, but thanks to perseverance with " Warfarin No. 3 " we are now clear except for an occasional visitant.

* Since the above was written one young one has left the nest, on 5th October.

LORD MAYOR OF LONDON VISITS WHITEABBEY COLLECTION

During his official visit to Northern Ireland in September, the Lord Mayor of London, Sir Cuthbert Ackroyd, visited Sir Crawford McCullagh's collection of parrots and parrakeets at Whiteabbey, Lismara. Accompanied by Lady Ackroyd, the Lord Mayor and Lady Mayoress of Belfast, various city dignitaries, and the Chairman and members of the Belfast Zoological Society, the Lord Mayor of London made a full tour of the aviaries and expressed his admiration for this outstanding collection of birds. In a speech of appreciation to Sir Crawford McCullagh the Lord Mayor of London said: "It is very important for the younger generation to form a love for birds and animals. I think it is part of the cultured life of our people. It is a most constructive form of art and brings out in the children fine qualities which we want them to have."

* * *

LONDON ZOO NOTES

By J. J. YEALLAND

Ten birds were brought from south-eastern Asia by David Attenborough and Charles Lagus when they returned from their latest "Zoo Quest", and these have been presented by the B.B.C. Television Service. The collection consists of a Bornean Fire-backed Pheasant, a Turquoise Fairy Bluebird, a Roulroul Partridge, five Blue-crowned Hanging Parrakeets, and two Black-winged Grackles. The handsome Bornean Fire-back has not been exhibited here since 1938, and the Turquoise Fairy Bluebird (*Irena puella turcosa*) is the only one of the eight different Fairy Bluebirds ever kept here—perhaps the only one ever imported.

Birds new to the Collection received during the past two months are a pair of Scintillating Copper Pheasants (*Syrmaticus soemmerringi scintillans*) received in exchange; a pair of Black-crested Finches or Pygmy Cardinals (*Lophospingus pusillus*) presented by Mr. J. R. Newmark; two Hainan Blue Flycatchers (*Cyornis pallipes hainana*), a Grey-backed Tit (*Parus cinereus commixtus*), and a Lanceolated Babbler (*Babax lanceolatus*) presented by Dr. K. C. Searle, who also sent a Black-necked Grackle, four Blood-breasted Pigeons, a Chinese Dial Bird, a White-browed Jay-Thrush, a Masked Jay-Thrush, a Wallace's Fruit Pigeon, and two Black-crested Cuckoo-Falcons.

Other presentations include a Malaysian Black-naped Oriole, a Chinese Jay-Thrush, and a Golden-fronted Barbet (*Cyanops armillaris*),



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Left to Right : THE LORD MAYOR OF BELFAST, SIR CRAWFORD McCULLAGH, BART.,
THE LORD MAYOR OF LONDON.
To face p. 226.

[Belfast Telegraph]

also known as the Orange-banded or Blue-crowned Barbet, sent from Johore Bahru by Mr. G. Newmark ; a Hooded Vulture sent from the Gold Coast and a young Spotted Flycatcher that was found with an injured wing.

Eight Ruffs have been received from Comte Léon Lippens as a gift to the Norfolk Naturalists' Trust for the purpose of releasing in the Cley Marshes early next spring, and in the hope that they will perhaps induce some of the passing migrants to stop and breed there. This is not the first time that the Society has helped such a project, for in 1939 four Ruffs from the Collection were released in Norfolk, but what happened on that occasion I do not know. Ruffs formerly bred in many places in England, and sometimes single birds or small parties stay for the summer nowadays.

A pair of Ruby-throated Humming Birds were received in exchange, and another Gallinule has been bred in the Great Aviary, but it is too early to tell whether it is a true Grey-headed or whether, as last year, the Green-backed is the father. The triangle is an amiable one, for it was sometimes possible to see a Grey-headed sitting on the nest with the other Grey-headed, and the Green-backed sitting close by, and all three guard the young one. Last year's bird is very like the Green-backed in plumage.

In the same aviary a pair of Crested Screamers are nesting, but it is, of course, too late in the year to hope for a successful breeding. At the Bird House the Black Crakes brought from Sierra Leone in 1954 have nested again, hatching three chicks on 22nd September. Two died at an early age, but the third is thriving and growing fast. Both parents take great care of the chick, providing it with food held in their beaks and, during the earlier stages of its life, whenever the family was out in the flight, one parent brooded the chick while the other brought nesting material for its greater comfort. This Crake (*Limnocolaptes flavirostris*) is common in suitable habitats over much of Africa southward of the Sahara.

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BRITISH AVICULTURISTS' CLUB

The fifty-third meeting of the Club was held at the Rembrandt Hotel, Thurloe Place, South Kensington, S.W. 7, on Wednesday, 26th September, 1956, following a dinner at 7 p.m.

Chairman : Miss P. Barclay-Smith.

Members of the Club : Mrs. J. R. Alderson, P. C. Bath, Hylton Blythe, A. W. Bolton, Miss K. Bonner, Mrs. V. M. Bourne, Major C. N. Clayden, W. D. Cummings, Mrs. R. E. Darnton, Mrs. H. Denny, M. F. Draper, W. T. Dring, Mrs. W. T. Dring, O. E. Dunmore, J. C. Garratt, Dr. E. F. Gleadow, A. V. Griffiths, H. J. Harman, Dr. E. Hindle, Miss S. I. Hobday, H. J. Indge, F. E. B. Johnson, F. T. Jones, Miss S. R. Joseph, Dr. R. S. Kirk, Miss E. M. Knobel, Mrs. E. M. Lonsdale, G. C. Lynch, P. H. Maxwell, S. Murray, Sir Crawford McCullagh, Bart., K. A. Norris, S. Porter, A. A. Prestwich, D. M. Reid-Henry, R. C. J. Sawyer, G. St. George Schomberg, J. L. Sears, D. Seth-Smith, H. A. Snazle, E. O. Squire, N. R. Steel, P. Sutton, J. A. Swan, Mrs. J. A. Swan, E. N. T. Vane, C. H. Wastell, Mrs. C. H. Wastell, Mrs. G. Wheatley, J. J. Yealland, D. Young.

Guest of the Club : Jean Delacour.

Guests : Dr. K. Aylwin-Gibson, Miss J. Barnes, M. W. Bradshaw, J. Burls, P. Collenette, Mrs. P. Collenette, J. G. Coppage, L. M. Coppage, Miss L. Craddock, R. W. E. Craddock, S. A. Croucher, Mrs. S. A. Croucher, R. E. Darnton, K. E. Dawson, Captain R. S. de Q. Quincey, Miss J. Dewey, Mrs. S. Demel, Mrs. M. F. Draper, Miss H. Frampton, Mrs. J. C. Garratt, Lord Gerard, Mrs. J. V. Gordon, Mrs. A. V. Griffiths, Miss M. Hagan, Miss B. Henderson, Mrs. F. E. B. Johnson, E. C. Kinsey, Mrs. E. C. Kinsey, R. G. Kirkham, F. A. Lack, Miss Lloyd, A. R. Longhurst, Miss D. G. Lonsdale, Dr. D. J. Macaulay, Mrs. S. Murray, R. McCallum, Mrs. R. McCullum, A. A. MacLaren, Mrs. M. E. Nichols, C. M. Payne, Mrs. C. M. Payne, T. V. F. Papé, Miss G. M. Rhodes, Mrs. D. Seth-Smith, W. J. Sheffler, Mrs. W. J. Sheffler, A. E. Sibley, R. Skipp, Mrs. P. Sutton, Miss C. F. Talbot Kelly, N. Turvey, Mrs. N. Turvey, Mrs. E. N. T. Vane, C. F. Whitaker, Mrs. C. F. Whitaker, Miss J. Worton, Captain V. Yovanovich, Mrs. D. Young, A. N. Other.

Members of the Club, 52 ; guest of the Club, 1 ; guests, 59 ; total, 112.

After the Loyal Toast the Chairman said it gave her very great pleasure to welcome one of the Society's Vice-Presidents and most distinguished members, Jean Delacour. By a happy chance it happened to be his birthday. The response to the toast to his health was vociferous. The Chairman then presented a Club birthday cake, the cutting of which was accompanied by the usual, somewhat unmusical, vocal birthday refrain.

Monsieur Delacour, with Gallic charm, thanked the members for their kind remembrance and said it gave him the greatest pleasure to be amongst them once more.

The Chairman then welcomed four distinguished aviculturists from California : Mr. and Mrs. Eric C. Kinsey, of Marin County, and Mr. and Mrs. William J. Sheffler, of Los Angeles. Mr. Sheffler had celebrated his birthday the previous day and as Sir Crawford McCullagh, Bart., had done likewise his name was coupled with the toast to the overseas visitors. Mr. Sheffler, on behalf of his fellow visitors, thanked the members for their very warm welcome.

In introducing Mr. and Mrs. Darnton the Chairman said that all members who had had the pleasure of seeing their film "From Hippos to Sunbirds" were looking forward with lively anticipation to the screening of their latest coloured film "From Flamingos to Rhinos". In this they would certainly not be disappointed for the later film was, if possible, even better than the previous one.

After the showing the large audience signified by sustained applause that it had really appreciated the skill, time, effort, and, by no means least, expense Mr. and Mrs. Darnton had devoted to the making of this unique film.

The next meeting of the Club is on **Tuesday 27th November, 1956.**

ARTHUR A. PRESTWICH,
Hon. Secretary.

Mr. Darnton has kindly written the following synopsis of the film :—

Our five months' safari in Africa—from the end of November to April—took us over 10,400 miles through Ruanda Urundi, the Belgian Congo, Uganda, Kenya, and Northern Tanganyika. Unfortunately, most of the time we had very bad weather, especially in Kenya and Tanganyika, where although it was the so-called dry season we had deluges of rain almost daily, which meant flooded rivers and impassable tracks. However, in spite of these drawbacks, we managed to bring home over 7,000 feet of colour film of birds and beasts of which "From Flamingoes to Rhinos" is a part.

Most of the 1,600 feet shown was taken in the Rift Valley in Kenya, the opening shot being of Mount Kenya itself, its peaks capped with perpetual snow. The soda lakes, which lie cradled along the valley's floor, are the favourite feeding grounds of the Lesser Flamingoes which crowd in great rosy drifts along their shallow margins or fly, like living flames, over their calm blue waters. To see and to photograph these strange and lovely birds in their vast multitudes is an unforgettable experience as they are surely one of the greatest wonders of the bird world.

The crater lake of Naivasha, deep and circular, and widely fringed with reeds and papyrus, is also of great interest, and here we filmed all sorts of birds, such as Terns, Pochards, Heron, Knob-billed Geese, a Jacana with her eggs on a floating lily pad, and a mating pair of Red-knobbed Coots—all against a background of blue waterlilies. The mating of the Coots makes an interesting record, as the female held her head under water while the male was on her back. At Naivasha we also photographed the Superb Spreos, one of the most colourful and locally common birds of Kenya.

While in the Marsabit Reserve we were fortunate in finding a nest of the Red-billed Hornbill, the nest-hole being about 15 feet from the ground and luckily fairly well lit. When we discovered it the parents were busily feeding their young through a slit in the tree trunk, which at its widest was only an inch across. Female Hornbills are incarcerated in the nest-hole during incubation and until the young reach a certain age, by the entrance hole being walled up with mud, the female assisting the male at this voluntary imprisonment. In this case the female had evidently only recently emerged, as she occupied herself, when not feeding her young, in flying back and forth to a near-by river where, hopping along the water's edge, she dug up lumps of wet mud with her beak, with which she proceeded to plaster up a large crack at the back of the tree that had evidently formed the entrance to the nest. While she was doing this, the cock spent his time in searching the ground for grubs and caterpillars, using his long curved beak as a lever to turn over the dried lumps of elephant droppings and also to dig, with a swinging motion, the soft earth under the trees. With the results of his labours dangling from the tip of his bill, he flew either to the slit to pass in the food to the nestlings, or round to the other side of the tree where the hen was busy at her plastering, to present her with a little sustenance. We were particularly pleased at getting pictures of all these activities as we believe that this sequence had never previously been filmed. The reel ends with some shots of a male Ground Hornbill, a huge grotesque looking bird, black with red wattles, stalking through the grass.

The second reel opens with the head and shoulders of a giraffe, and presently as it moves we see several Red-billed Oxpeckers clinging to its head and neck with close-ups of the birds themselves.

A breeding colony of White-fronted Bee-eaters, and Penduline Tits constructing their felt-like nest, are followed by an unusual picture of a magnificent Bateleur Eagle, its wings outspread like a white cross, as it dries its feathers after a shower of rain. Hundreds of migrating Storks, White-backed and European, are next seen, the latter completely blocking our road as our car drives slowly through them.

One night we heard a tremendous bellowing from fighting hippos in a near-by lake, and next day we found the corpse of one of the

contestants floating near the shore. In the flank was a hole where one of the huge teeth of the opponent had pierced the thick hide, and this hole was a great attraction for a number of White-backed Vultures which took it in turn to "have a bite"! A small crowd of these ugly, but useful, birds were hanging about near the water's edge, and here we photographed a scene which seems to prove that at least some birds have a sense of fun, for among the vultures were two or three White-necked Ravens who were amusing themselves by sneaking up behind the unsuspecting vultures and tweaking their tails! Further along the shore depressed-looking Marabou Storks paraded with their wings outstretched, accompanied by a crowd of Wood Ibis.

This year, after many days of searching, we at last found the nest in some thick bushes of the spectacular Red-breasted Shrike. These birds are very shy and difficult to photograph, but after many hours of patient waiting we managed to get some quite good pictures of the male and female at the nest.

The Double-toothed Barbet was also photographed, a close-up of the female peering out of her nest-hole distinctly showing the "double-teeth" on the upper mandible.

At Amboseli we watched Yellow-throated Sand Grouse drinking at a waterhole, and here also we were lucky enough to get some close-ups of the famous long-horned Black Rhino with her two daughters, the three very rotund back views as they walked away from us making a fitting finale to the film.

* * *

NEWS AND VIEWS

E. J. Boosey reports that two fine young Cuban Amazons, an obvious pair, have been successfully reared at *Brambletye*.

* * *

Sir Edward Hallstrom has bred three Yellow-cheeked \times Cactus Conure hybrids. They all have the appearance of their female parent.

* * *

A number of Quetzals have recently been listed amongst the new arrivals at several Zoos—Antwerp, one; Rotterdam, four; Brookfield, U.S.A., four.

* * *

H. Murray reports the following birds reared: seventeen Cockatiels, two Bourkes, two Guiana Parrotlets (second generation), about nine Nyasa Lovebirds, and three Green Cardinals.

At long last a Red-faced Lovebird has been bred at *Darenth-Hulme*. One young one left the peat-filled nesting-barrel on 5th October and is now fully independent.

* * *

P. A. Birch has bred two Mealy-Barnard \times Golden-mantled Rosella hybrids. He says "they would pass for Stanleys, excepting for larger size and a little less red on the breast".

* * *

K. W. Dolton has had a nest of four White-eared Conures reared. This is quite a notable success, as it is only the fourth similar event in Great Britain this century.

* * *

Two Australian aviculturists, Alf. Le Busque, of Ringwood, and Ivan Hyndman, of East Ivanhoe, have bred the Golden-shouldered Whydah. This is a double first for Victoria and probably for the whole of Australia.

* * *

Jan Roger van Oosten, San Marino, California, has bred two Grey-headed or Malabar \times Pagoda Mynah hybrids. The young ones are described as being powder grey in colour with a few dark greyish patches showing on the wings.

* * *

A successful and interesting experiment at the Doncaster Zoo, during the last few months, has been an aviary with a single specimen of each of seven different species of Cockatoo. All have settled down well and no trouble whatsoever has arisen.

* * *

"Mr. Ramshaw," Captain C. W. R. Knight's famous Golden Eagle, has made its last crossing of the Atlantic. Captain Knight has now gone to live in Kenya, and "Mr. Ramshaw" has been acquired by the Detroit Zoo. Thus ends a partnership that has lasted for twenty-eight years.

* * *

Lloyd B. Thompson, British Columbia, writes: "We have had a wonderful summer this year, and the birds have done quite well. The pair of Turquoisines raised eight in two nests, the Bourkes seven, the Lineolated six, and the lutino Ringnecks three. The warm weather helped us to raise dozens of finches."

* * *

Dr. S. B. Kendall reports: "The Citron-crested Cockatoos now have young (1 or 2) in the nest, about six weeks' old. The first clutch was evidently a wash-out. This year's Plum-head is a really beautiful bird, and I am further encouraged by the fact that last year's young bird has greatly improved with the moult, and still looks every inch

a hen. This will give me three unrelated pairs and an odd one ; but it is an awful struggle."

* * *

Last year the eyes of field-ornithologists were focused on a quarry in East Sussex where Bee-eaters successfully reared young. This year the focal point has been changed to an old barn in the Hampshire village of Nether Wallop. Here, in a hole in the chalk wall, a pair of Hoopoes successfully reared one young one.

First the Bee-eater, now the Hoopoe. Will next year be the turn of the Osprey ? Both last year and this one pair nested unsuccessfully in Scotland. It is to be hoped it will be a case of third time lucky.

* * *

The Hon. Treasurer requests that the attention of Australian members be drawn to the fact that the annual subscription is £1 sterling. Recently several new members have quite unwittingly sent £1 Australian. The result is that with the rate of exchange and commission the amount eventually credited to the Society's account is usually only about 14s. 9d.

A. A. P.

* * *

REVIEWS

AVIARIES, BIRDROOMS, AND CAGES. By L. P. LUKE and ALLEN SILVER, F.Z.S. Published by Cage Birds and Poultry World, Ltd., London, 1955. Price 7s. 6d. net.

The fact that this is the sixth edition of this book is evidence in itself of the great demand there is for the information it contains. The names of the authors alone are sufficient incentive to buy the book in order to gain from their wide experience. This new edition has been completely revised and brought up to date and is most comprehensive. It contains advice not only for those who wish to construct their own aviaries but also to those who prefer to buy them, and information on types for particular purposes is included, also methods of blending enclosures with the surrounding garden, and preparing the site. Cages, appliances, and utensils are described, and the value of the book is enhanced by thirty-eight black and white photographic illustrations and forty-eight line drawings.

P. B-S.

LE SERIN DES CANARIES. By MARCEL LEGENDRE. Editions N. Boubée & Cie, Paris. 1955. Price 810 francs net.

Monsieur Legendre's two previous books in this series, on cage birds in general, and on budgerigars, were reviewed in the May-June, 1953, and September-October, 1954, numbers respectively, and the present work on canaries maintains the high standard of its predecessors. The book opens with a full account of the history of the Canary and how it came to be given this name, the description of the first importations into Europe being particularly interesting. The author then proceeds to give full information regarding varieties and races, and continues with a section on breeding; this includes details of the care that should be taken with regard to the birds' welfare in order to induce them to breed, the cage, feeding utensils, and other appliances, and numerous suggested menus. Advice is given on how to deal with various maladies, the moult, nervous attacks and accidents in laying. The two final chapters of the book are devoted to hybridization and to artificial colouring by means of special feeding; but, as Prince Paul Murat states in the Introduction: "Serins whose colours are obtained naturally by selection, crossing, or hybridization are the most beautiful. It is normal to give them food containing vitamins in order to enhance their colours, but to tint them, or endeavour to change their colours by drastic methods should be forbidden."

The book is illustrated with thirty-four line drawings, thirteen photographs by G. Vermande, and two colour plates by L. Delapchier. The text is concisely and clearly written, and should not be difficult for English readers to understand.

P. B-S.

VOGEL IN KAFIG UND VOLIERE (CAGE AND AVIARY BIRDS).

By DR. JOACHIM STEINBACHER and H. E. WALTERS, with collaboration of numerous other ornithologists. 1st Part: DIE PRACHTFINKEN (Waxbills). In approximately 22 sections. H. Limberg, Aachen, 1954-56. Price DM. 2.80 per section.

A review of this work was given in the AVICULTURAL MAGAZINE, March-April number, 1955, when nine sections had been published. Now sections 10-16 inclusive have appeared and deal with twenty-seven species. As in previous sections there is a black and white illustration of each species described, but in the sections under review a number of actual photographs of the birds, by Nicolai, are included, which are an improvement on the line drawings. In addition there are three colour plates, each depicting several different species of Waxbills of India, Java and Australia. The text is right up to date and information is quoted from material published as late as 1955.

P. B-S.

SUMMER MIGRANTS. By ERIC HOSKING, F.R.P.S., M.B.O.U.
An E.P. Poster Stamp Book with 32 original colour photographs.
Published in association with the Royal Society for the Protection
of Birds by Educational Productions, Ltd., London, 1956. Price
3s. 6d., complete with stamps, 1s. without stamps.

This booklet, which is primarily intended for children, is the first of a series illustrating birds of Britain in colour and contains a guide to thirty-two species of summer migrants to this country. The notes, prepared by P. E. Brown, Secretary of the R.S.P.B., comprise an introduction on migration, information on each species, and a concluding chapter on how to enjoy birds. A space is marked for the coloured stamps to be affixed above the notes, no doubt the intention being that the stamp should be affixed as soon as the species concerned has been observed ; this should be a great incentive to young persons to study bird-life.

P. B-S.

BIRD WATCHING. By BRUCE COLEMAN. Foyles Handbooks.
Published by W. and G. Foyle, Ltd., London, 1956. Price 3s. net.

This book is mainly a compilation and acknowledgment is duly given to the sources of information. It is a general survey of the various aspects of bird study and also contains chapters on bird protection and the 1954 Act, and the National ornithological societies.

P. B-S.

CAGE BIRDS DIARY FOR 1957. Published by Cage Birds and Poultry World, Ltd., London, 1956. Price 5s.

This diary, which is now reissued after a lapse of many years, in addition to being a useful medium for making notes, engagements, etc., contains a great deal of information of special value to bird-keepers, such as a list of the names and addresses of specialist societies, a glossary of terms used among fanciers, and a list of books on bird keeping. There are also notes on common ailments and accidents.

P. B-S.

BIRDS OF BRITAIN CALENDAR FOR 1957. Country Life, Ltd., London. Price 6s.

This calendar with photographs of thirteen different species of British Birds by Eric Hosking is as good as its predecessors. It includes three species of Tern, Arctic, Black and Little, the Common and Kittiwake Gulls, and the Shag, so those who are specially interested in sea-birds are well catered for.

P. B-S.

NOTES

RESEARCH PROJECT CONCERNED WITH THE HYBRIDIZATION OF SURFACE-FEEDING DUCKS

The Conservation Department of Cornell University is conducting a research project concerned with hybridization in surface-feeding ducks, including the Mallard, Pintail, Black Duck, Gadwall, Green-winged Teal, Blue-winged Teal, and Shoveller. The purpose of this study is to obtain further information on the relationships within this controversial group, using behavioral data, relative fertility determinations, and possibly other physiological techniques. It is hoped that the greatest possible number of hybrid crosses among these species may be studied, and we are in need of first generation male hybrids of known parentage for this purpose. Any aviculturist who happens to possess such birds, and who is willing to lend them to the Department for this project could assist us greatly. It would be appreciated if interested persons would contact Charles G. Sibley or Paul A. Johnsgard, Department of Conservation, Cornell University, Ithaca, New York.

CHARLES G. SIBLEY,
ASSOCIATE PROFESSOR OF ORNITHOLOGY.

A NATURAL COLOUR VARIETY OF THE RED-EARED WAXBILL

About a year ago I came across a colour variety of the Red-eared Waxbill (*Estrilda astrild*). It was shown to me by a dealer who had found it in a newly-imported consignment. I was not able to buy it and assumed that whoever had purchased it would make it known, but having heard nothing of it I feel it might deserve a mention.

On head, mantle, and wings it lacked the normal pinkish or greyish tint and was instead a warm, light brown. The breast and flanks were sandy-buff and as far as I recall the tail was the usual black edged with white. The most conspicuous points about it were the streak through the eye and the patch on the belly, which in the normal bird are scarlet. In this specimen they were a pure orange colour. I regret that I did not remember the colour of the bill.

As far as I know no colour varieties have previously been recorded in this species, and this one, which appears to have been of the "cinnamon" type, suggests that there may be interesting possibilities of colour breeding in the Estrildine Waxbills.

C. J. O. HARRISON.

* * *

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NAT.
HIST.

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RED-FACED LOVEBIRDS

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JANUARY—FEBRUARY, 1957

BREEDING THE RED-FACED LOVEBIRD

Agapornis pullaria

By A. A. PRESTWICH (Southgate, England)

“The trading vessels continually bring away considerable numbers in cages : but they are so tender that most of them die in their passage to our colder climates. It has also been remarked that many of them have dropped down dead through timidity at the firing of a vessel's great guns.”

So wrote the Rev. Thomas Smith in 1806.

It has certainly been our experience that when newly imported the Red-faced is incomparably the least hardy and most timid of all the lovebirds known to Aviculture. Newly imported birds are very subject to cerebral hæmorrhage, brought on by fright. In spite of exercising every possible care we have, at various time, lost dozens. The sudden opening of a door or window, the entry of a visitor to the bird-room, even a quick movement has proved quite sufficient to cause a fatality. We have often marvelled that any manage to reach these shores alive.

The Red-faced, alone amongst the lovebirds, is invariably imported with the flight-feathers of one wing cut : this is often done with such carelessness that the wing itself is mutilated. It used to be recommended that the stumps of the quills should be removed—one or two at a time, repeating the operation about once a week until all are removed. We would hesitate to follow such a recommendation. The shock of handling alone would more than likely prove fatal to a bird already very considerably debilitated by the rigours of trapping and importation, coupled with injudicious treatment generally. In the past we have had hundreds of Red-faced, all too many have been short-lived, but survivors have invariably been allowed to moult the stubs naturally. In addition, no attempt has ever been made to induce a false moult.

Many aviculturists have had good pairs of adult birds in hard condition. Why then do they not breed with them? The main trouble appears to be that the ordinary aviculturist has a somewhat defeatist attitude towards this species. He knows that the majority of the imported lovebirds are comparatively free-breeders and that the Red-faced has a very bad reputation in this respect, having rarely got much beyond the laying of eggs. He argues there must be some very good reason: and instead of trying, let alone persevering, he tries his luck with birds that are, by general consent, more likely to prove breeders. He cannot be blamed, for, after all, most aviculturists are limited as regards aviary space, and we all do like to breed birds!

I have been keeping this little parrakeet almost continuously for nearly thirty-five years. During the past four years especially, the effort to breed it has been both extensive and sustained, and it is the events of this period that I propose to detail. Let me here say that the many years, with their seemingly endless disappointments, have at long-last proved rewarding in that we have now reared a single young one.

In the early part of 1953 we constructed what we hoped would prove an acceptable aviary, providing the very necessary seclusion. Being such timid birds it is absolutely essential that they should enjoy a sense of security. It measures 24 ft. by 18 ft. by 7 ft. 6 in. high; the materials being $\frac{1}{2}$ in. wire-netting and larch poles. Three sides are totally enclosed and the fourth, the one with the gate, three-quarter enclosed with sheets of asbestos. The roof is covered with asbestos sheets to a width of 4 feet on the north side, and 2 feet on the three others. The enclosure contains a shelter 8 ft. by 3 ft., raised 3 feet from the ground, and seven or eight nut-bushes. At the outset four full-size bales of peat-moss were mounted on staging in the centre of the aviary. But this did not prove a success and, as will be seen later, we had recourse to a method somewhat similar to that originated by Edward Boosey and used by him in his experiments before the war.

The 18th May, 1953, dawned bright and clear, and with the weather forecast "Fine, with long, sunny spells" we judged the time had come to introduce our small flock. Ten specially selected pairs were released and all proved to be strong fliers. They very quickly settled down, but in the afternoon there was torrential rain, during which the entire flock remained out! Fortunately, and to our great surprise there were no ill-results. During the next few months there were several deaths, and as bird-room birds moulted and became full winged they were added to the community to make good the losses. From the first, great interest was shown in the bales of peat-moss and soon several pairs were busily engaged excavating holes. But unfortunately they were not content merely to excavate nesting sites; they bored, and with such good purpose that they ran tunnels right

through the bales—they just didn't know when to stop! No eggs were laid which was, perhaps, just as well.

Came October with slight ground frosts and on the 7th we judged the time had come to bring them in for the winter. The catching up of birds in a largish aviary is at no time easy. I am not particularly good with a net and so, albeit with many qualms, I entrusted the operation to two well-known experts, who must of necessity remain nameless. But put not your trust in experts! These two could not have been more inexperienced and were quite incapable of appreciating the delicacy of their task and, in spite of my explicit instructions and frequent exhortations to exercise the greatest care, caught them up regardless of everything and damn the consequences. The result was very much worse than anything even I had foreseen. Twenty birds were caught up and within a week half of our precious stock had died from concussion, cerebral hæmorrhage, and pneumonia consequent on shock. As can be well-imagined it was a very distressing and discouraging experience.

We still had a number of birds in various stages of moult, and during the next few months we were able by various and devious means to buy in a couple of dozen or so newly imported birds. Then started a further series of losses, all the old causes, but by the end of April, 1954, we had 31 good birds, including 10 from the previous year, ready for turning out. In the meantime the bales of peat-moss had been replaced by eight large grape barrels, approximately 34 inches deep by 14 inches across the mouth, which had been filled with wet peat-moss, rammed hard. Then on 11th May, a glorious day with a temperature of 82° F., we turned out the flock. Within an hour a very fine male managed to hang itself in the fork of a bush, and next morning a male and a female were picked up dead—fractured skulls. Thenceforth nothing untoward happened.

The barrels proved very acceptable and provided both constant amusement and outlets for unlimited energy. Several were more or less seriously "occupied" and at one time we had high hopes, but month followed month and no young ones made their appearance. Towards the end of September there was very considerable activity in the barrels, apparently a sort of autumn cleaning. Fourteen whole eggs and many fragments were thrown out of the nests. None had contained a chick, and we were, in fact, unable to determine whether any had been fertile as all were quite dried up.

As some will remember the summer was not worthy of the name. The weather having been so poor we considered our flock must have been well and truly acclimatized to have withstood it. Had the summer been the type our fathers are said to have enjoyed we would have hesitated even to consider leaving them out, but having been so bad we thought that by contrast the winter couldn't be so very much

worse! This, coupled with the remembrance of the catching-up disaster of the previous autumn, persuaded us to take a chance and leave them out, only catching them up if it appeared that the weather really was going to prove too much for them. We did, however, catch up two females that were poor fliers and left out 26. In the past we have always been concerned when the temperature in the bird-room has dropped below 40° F. But, and we consider this quite remarkable, all 26 came through the very variable and treacherous winter, with the temperature on occasions as low as 21° F. Even on the very coldest days, and with thick snow on the ground, they were all in the rudest health and full of the joy of living. At night some occupied the nesting barrels, but the majority hung suspended head down under the sheltered parts of the roof.

In the early spring, 1955, the old barrels were replaced by other prepared during the winter. This time a smaller barrel was used approximately 14 inches deep and 12 inches across the mouth. The number was increased to a dozen and they were hung facing north and west.

When we broke up the old nests we found that in general the burrow extended on a slight incline to a depth of perhaps six or seven inches and then opened up on one side into a nesting chamber about the size of a largish orange. In no case did the burrows turn vertically and then double back so that the nesting chamber was more or less above the entrance hole—as has been stated on occasions. No nesting material of any kind had been carried into any nest.

The task of excavating falls mainly to the females. The males show great enthusiasm but are more of a hindrance than any real help. They burrow into the peat with the greatest of ease and since we have used the barrels we are not aware that any has got into difficulties on account of an excavation caving in. When we used the bale of peat we did have one fatality—a female that somehow became wedged about nine inches along an open tunnel.

Early in 1955 a young male managed to crack its skull, and during a warm spell the two poor flying females were restored to the aviary so that we started the season with a complement of 27.

The summer proved to be the best and certainly the warmest for many years, and as week followed week of almost unbroken sunshine our hopes rose. We felt there was a really good chance of success. That they had wintered out proved they must be in first rate condition; this coupled with the glorious weather led us to believe that they would now breed, if ever. About ten pairs burrowed, several appeared to be serious in their intent. There was much mating, over twenty eggs it later transpired, but no young. There is some variation in the size of the eggs, $20-21 \times 16-17$ mm.; 20×16 mm. being a fair average.

On the 3rd December a "stranger" appeared in the aviary, hanging on the netting, apparently unable to fend for itself. We brought it into the house where it remained caged until the spring, when it was returned to the enclosure. Several authorities examined it and pronounced it to be a young one. We would like to think it was a home-bred bird, but we haven't the faintest clue to its origin, so we have recourse to the Scottish verdict "Not proven". It has developed into quite a nice little female but still retains a somewhat juvenile appearance.

It is very remarkable, but in recent years both summers and winters invariably establish or break records of one kind or another. A record-breaking summer was naturally followed by a record-breaking winter : days and nights of pitiless frost with the temperature on one occasion down to 15° F. The flock was again left out and successfully withstood this, the worst winter of the century. The losses were negligible : one female was found dead egg-bound on 25th November, and one in late December for no ascertainable cause.

We now come to the year 1956. We suffered an invasion of mice during the previous year : only comparatively few got into the lovebird enclosure and, as far as we know, none managed to climb up to the barrels. We eventually entirely cleared the aviaries of these pests and took all reasonable precautions to prevent a repetition of the nuisance. In the spring sheets of galvanized iron were sunk in the ground, leaving 18 inches above ground. The staging was reconstructed and we are now confident it is virtually impossible for any mouse to gain entrance to a barrel. The new lay-out enabled the number of barrels to be increased to sixteen, eight facing north and eight west.

It could hardly be expected that we should enjoy two successive good summers. And so it came as no great surprise that the summer of 1956 proved to be one of the worst for quite a few years : sunless, cheerless, wet, with cold nights. There cannot have been more than nine or ten real summer days during the whole period.

Matters went very much as in previous years, matings, excavatings, and more matings. The weather was really so poor that no breeding results could reasonably be expected.

It is said that one of the main attractions of Aviculture is its very uncertainty. True or false it is definitely very uncertain ! During the many years in which we have engaged in the "Amiable Art" we have experienced many trials and tribulations, mixed, be it said, with just a few joys and triumphs. We now enjoyed one of the rare triumphs, really quite an unexpected one.

5th October, 1956. On this day a single young one emerged from a barrel. It was well-grown and a good flier but very soft in condition and altogether miserable looking. The female parent which had not

been seen for some weeks was in very poor condition and miserable looking, too. Both of them did little except sit close against each other with their beaks tucked into their shoulders. The male was invariably in attendance, sitting on the other side and giving general support to the young one. At frequent intervals the young one bestirred itself and begged for food, with drooping wings slightly open and quivering at the same time "bleating" incessantly—a like performance never witnessed by us with any other *Agapornis* species. Fortunately the male was always willing to oblige, for the female most certainly didn't appear as though she were capable of feeding herself, let alone assisting with even a single young one. The temperature that night dropped to near frost and we were far from hopeful of the survival of either, especially as they did not retire to the barrel but roosted on the top of it. However, survive they did. The next four or five days they spent huddled together, two very dejected looking little creatures but as they were able to fly and day followed day we became less pessimistic, more so as the nights had become markedly less cold. Then after about a week there was a decided improvement in their appearance. The male no longer remained in such close attendance but was always within easy reach and ever on the alert to drive off any other bird that ventured too near his family. For the next month it was quite usual to see all three sleeping close together. They were not actually seen to re-enter the barrel but they may have done so as one of their favourite perches was, and still is, on the peat retaining board fastened to the front.

On leaving the nest the young one was, as already stated, in a very soft condition. In colouring it is a washed-out replica of a female; the green is dull, entirely lacking the beautiful, vivid sheen of an adult; the yellow-orange of the forehead, face, and throat is paler and less extensive; beak a pale brownish-orange; rump bright blue but paler under wing-coverts green, sparsely feathered; tail as in an adult but shorter and the colouring paler. The general impression is that when it moults it will prove to be a female; this is heightened by the fact that there are no black feathers in the under wing-coverts.

Food. Our Red-faced colony lives almost entirely on soaked millet sprays and soft, sweet apples. White millet, pannicum, and canary seed are always available, but they are rarely, if ever, touched. It should be mentioned, in passing, that to our great cost we have found it most inadvisable to give soaked millet sprays to newly imported birds. They gorge themselves and seem quite unable to assimilate it. The sprays, apples, and cuttle-bone are hung on the netting and the other seeds, water, and grit are supplied on a table. There is therefore no necessity for them to descend to the ground and it is indeed quite exceptional to see any do so. But very occasionally about half a dozen may be surprised fossicking about, usually amongst the peat-moss that

has fallen during the course of excavation. We are quite unable to account for the fact that these little parties always appear to be composed of males only. The ground of the aviary is overgrown with weeds of all kinds and there is also much sprouting seed, but none ever seems of interest: certainly we have never seen a lovebird so much as nibbling chickweed or anything else, so we do not think green food in any form was used in the rearing of our young one.

A few details still need to be filled in. Only one young one left the nest but it is extremely unlikely that the clutch consisted of only one egg. We can only assume that, in conformity with several other nests, the number was between four and six. We may perhaps know more of this when the barrel is replenished with peat-moss. It is the same with the incubation period, we surmise it to have been 20-21 days, but of this we have no confirmation.

During all this time there were Diamond Doves and Chinese Painted Quail in the enclosure, but their breeding operations, and the Quail were remarkably successful, in no way interfered with the lovebirds and the lovebirds in turn appeared to be quite unaware of their presence.

Any member specially interested in this species is very welcome to come, preferably by appointment, and see our "breeding" colony. And, please, no post cards enquiring whether we are certain our Lovebirds are Red-faced and not Peach-faced. We really do know the difference!

The sequel is very unfortunate. The night of 6th November had a slight ground frost accompanied by light fog. The combination was apparently just too much for the young one and in the morning it was breathing heavily. We caught it up as a precautionary measure. Its condition did not at first give rise to any great anxiety, but it deteriorated very rapidly and within a few hours it was dead. It died on the thirty-fourth day after leaving the nest and was quite independent of its parents.

The post-mortem examination carried out at the Zoo showed that the cause of death was pneumonia, and confirmed that, as expected, the young one was a female.

As described above, A. A. Prestwich has bred the Red-faced Lovebird (*Agapornis pullaria*). It is believed that this may be a first success.

Any member or reader knowing of a previous breeding of this species in Great Britain or Northern Ireland is requested to communicate at once with the Hon. Secretary.

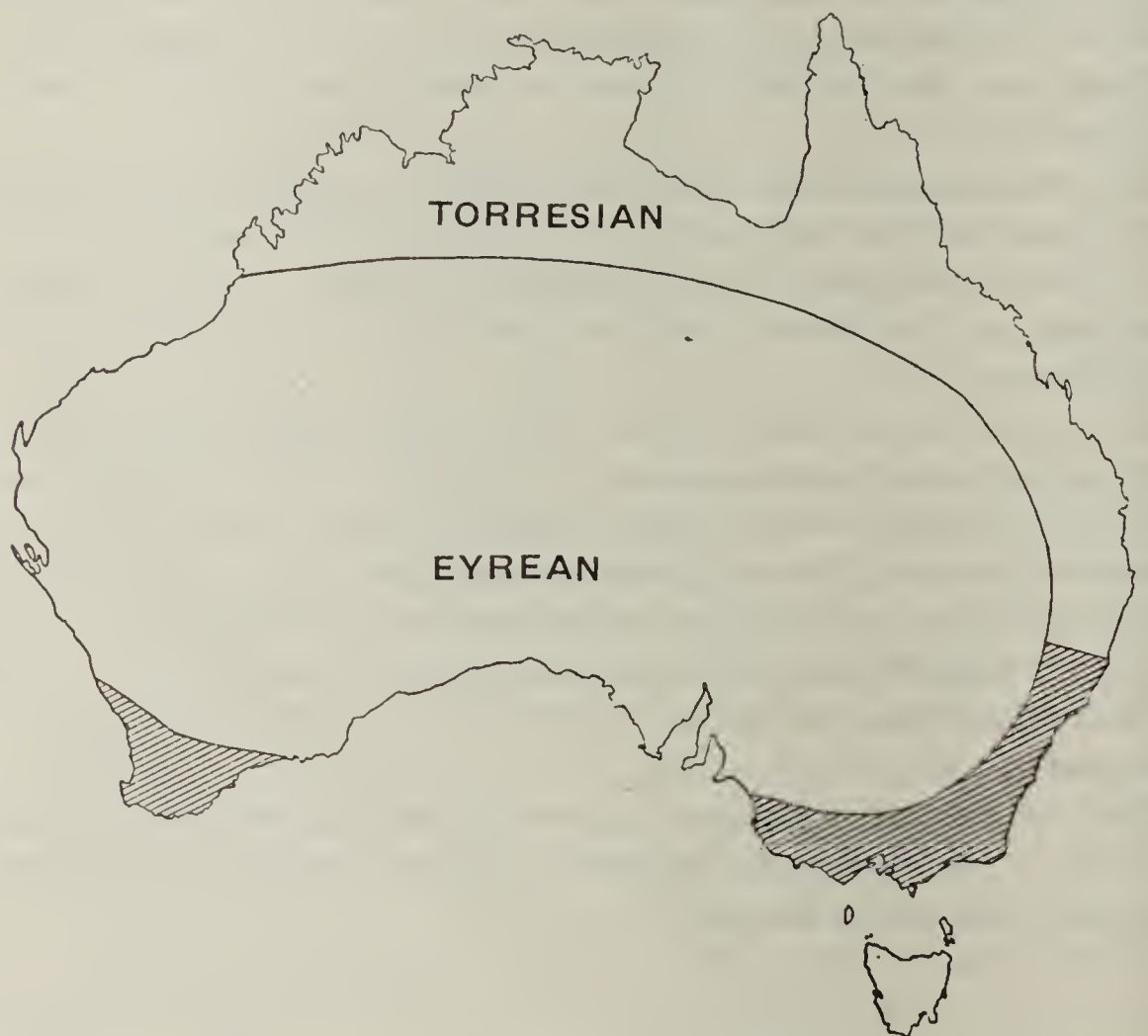
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THE PILEATED PARRAKEET

(Purpureicephalus spurius)

By P. M. A. HARWOOD, M.R.C.V.S. (Darlington, Western Australia)

The Pileated Parrakeet, known in Australia as the Red-capped or West Australian King Parrot, is a most interesting bird. A member of the Bassian fauna of south-west Australia, the bird has no close generic relatives. Generally speaking the Bassian fauna of the south-west is represented by an identical or similar and related fauna in the Bassian region of Eastern Australia, an indication of a previous connection across the existing barren Eyrean region which now acts as an effective barrier against eastwards and westwards migrations (see Map 1).



MAP 1.—Hatched areas show the Bassian Areas of S.W. and S.E. Australia.

The Pileated Parrakeet is a bird with a limited range in the south-western corner of Western Australia. It is limited in distribution to the Jarrah and Karri forest areas, the south-west coastal plain, and has made some limited extensions into the white gum forests and mallee areas and along the south coast (see Map 2.)



MAP 2.—Range of Pileated Parrakeet. Heavily hatched areas are those of greatest population density.

Genealogically, the bird is supposed by Serventy and Whittell (1) to be a surviving prototype of the Broadtail Parrakeets (*Platycercines*), which are represented in Western Australia by the Yellow-naped or Twenty-eight Parrakeet (*Barnardius semitorquatus*), the Port Lincoln or Bauer's Parrakeet (*B. zonarius*), and the Stanley Rosella (*Platycercus icterotis*); this prototype now having become extinct in the eastern region.

The author feels that this is not the true relationship. It is true that the bird shows several of the general characteristics of the Platycercine Parrakeets, but these characteristics are also seen in the small Broadtails (genus *Psephotus* and related genera which include Red-rumped, Many-coloured, and Blue-bonnet Parrakeets).

More weight can, I feel, be given to the argument that the Pileated is a bird which has followed a lone evolutionary development. That this development has occurred from Broadtail stock is suggested on morphological grounds, on the characteristic exhibition of a row of white dots on the under surface of the flight feathers in immature plumage, and on the striking resemblance of the calls of young Pileateds to the very similar normal calls of the Platycercines generally.

As evidence against the bird being a progenitor of Broadtail stock, two characteristics of the group as a whole are quite different in the Pileated. The sexual display is quite unlike that of any other Broadtail and the calls of the mature birds are also strikingly dissimilar.

The beak shows a remarkable evolutionary development. The peculiar elongation of the upper mandible is seen in only three other Australia psittacines—the Slender-billed Corella, the race *tenuirostris* of Baudin's Black Cockatoo (both these forms occur in south-west Australia), and the rare Blue-cheeked Parrakeet of North Queensland (Hallstrom (3)).

That the bird itself is in a process of evolutionary change is suggested by the fact that, whereas some females exhibit a similar, though duller, plumage to adult males, others never progress beyond the dull juvenile plumage of the immature. This phenomenon may even be seen in females from the same nest.

This description of the bird, given by the Duke of Bedford (3), is so comprehensive that I can add little to it.

“Adult male. Cap dark crimson ; cheeks bright greenish-yellow ; mantle and wings green ; under wing-coverts, outer edge of wing, and portion of flight feathers blue. Rump yellow with a greenish tinge. Central tail feathers green, darkening towards the tip. Outer tail feathers blue and white. Breast purple. Vent and under tail-coverts red. Bill bluish horn and peculiarly long and narrow. Total length $14\frac{1}{2}$ inches. Size about that of a pigeon.

“Adult female. Very variable. Some hens, except for a few green feathers on the cap and a duller shade on the cheeks, have the same plumage as the male. Others, even sisters in the same nest as the bright form, never acquire a plumage very different from the immature, save that they are a little more purple on the breast.

“Immature. Head and upper parts a dull, dark green, slightly paler on the cheeks ; bastard-wing, primary coverts, and outer edge of flight feathers blue ; rump greenish-yellow. Middle tail feathers bronze-green. A narrow bar of red across the forehead. Throat and foreneck

dusky grey with a slight reddish tinge on the breast. Abdomen pale, purplish-blue. Lower flanks and thighs apple green, the feathers margined with red. Under tail-coverts similar but paler and inclining to yellow. Adult plumage is acquired with the first complete moult when the bird is a little less than a year old."

Females can always be picked from males in full colour as in the former the cap is always more maroon than crimson.

The species is subject to a certain amount of erythrism and some birds show a red edging to the yellow feathers of the rump. There is also a considerable variation in the amount of blue in the wings and in the depth of purple in the breast of males. It is a remarkable thing that such garish colours combine into a very effective camouflage. Birds seen at a distance appear a uniform, inconspicuous greyish-green and it is not easy to differentiate between immature and coloured birds in the field.

The one conspicuous feature of the Pileated in flight is the yellow rump and this feature is the one by which the bird can be quickly differentiated in the bush. The flight of the Pileated is quite characteristic and is composed of a series of undulatory glides interspersed by ten to twelve rapid wing beats. It is a swift and agile bird.

The range of the Pileated has already been described. Within this range, the bird has adapted itself well to changes in environment caused by the advance of agriculture and, in spite of persecution by man, is in no immediate danger of extinction.

In some areas the birds are "declared" as vermin on account of the damage they inflict to orchards, and nowhere are they protected by law. Even in King's Park, in the heart of Perth, it is not unusual to see a few Pileated Parrakeets, and there can be few suburban gardeners who have not had their almond trees raided at some time. However, on account of the very effective camouflage, few people recognize the birds and most of these depredations are blamed on the "Twenty-eights".

The Pileated is a tree lover and keeps to the forests and belts of trees. The "parkland" type of clearing with the retention of trees for shade and shelter have suited the birds, while they have been quick to turn to their advantage the introduction of many new and edible flora species.

The natural foods comprise the seeds of various eucalypts, chiefly red gum, white gum, and jarrah; the seeds of sheokes (*Casuarina* spp.), banksias, native pears, and various other native trees and shrubs and grass seeds. Like most parrakeets, the nectar of flowering eucalypts is also relished.

Introduced foods for which the birds show a liking are oats and wheat, apples, pears and stone fruits, almonds, pine cones, and the seeds of many of the introduced pasture plants.

The breeding season is approximately between October and December, but birds on the coastal plain usually nest about a month in advance of those on the Darling Range escarpment. The nest site is a hollow in a tree seldom less than 40 feet from the ground. Red gums, jarrahs, and white gums are selected as nest trees and the birds show a preference for hollows which face east to north.

Green trees are almost invariably selected, but the type of nest site shows considerable variation. There is usually a preference for sites with a small entry hole and this often shows signs of chewing. Some nests are at the level of the entry hole, others descend a considerable amount. One nest was found where the eggs were laid 15 feet below the entry hole.

From five to seven eggs form the normal clutch and incubation takes approximately twenty-four days. The female alone incubates, being fed by the male. He usually flies to a near-by tree and calls the female off the nest to be fed. She returns immediately to the nest. Feeding times are usually 8 a.m. and 4.30 p.m. For about two weeks before the young birds are ready to fly they can be heard calling for food at these times. The call is a prolonged double whistle, the second note being about three tones higher pitched than the first.

All the young birds normally leave the nest on the same day and are fed by their parents for about another fortnight. During this period they utter the double-whistle call almost incessantly and will fly to any adult, even a stranger, demanding to be fed. Nesting territories are rigidly guarded and both members of a pair act in unison to repel an invader. Mated pairs fly together, but young birds congregate into loosely integrated flocks when independent of their parents. These flocks lack the close integration and discipline of the flocks formed by young Rock Peblers.

Towards the end of winter, birds congregate into large flocks of all ages and both sexes, often around farms and other places where there is a ready food supply. These flocks suddenly disperse with the advent of spring when the birds again fly in individual pairs and start to dispute over nesting sites.

Depending on seasonal conditions, these large winter flocks may last for months or only a few weeks.

There are three basic call notes of the Pileated Parrakeet. The first and most often heard call is a harsh grating cry frequently reiterated and of short duration and usually uttered in flight. The alarm call is a variation of this. The second call could be likened to "Kilililik". This call is usually uttered when the bird is perching.

There is also the double-whistle call of the young bird, also uttered by females wishing to be fed by their mates.

In addition, males when displaying often make a clicking noise,

apparently with the beak, and when a number of newly-trapped birds are confined in an aviary they dispute roosting sites with a peculiar squealing call which is often continued long after dusk.

MATING BEHAVIOUR

Males exhibit a display quite unlike that of the Platycercine Parrakeets. The feathers on the cap are erected and the tail is shaken vertically, never horizontally. Hens out of the breeding season are far more dominating than is usual with Broadtails. Both members of the pair prospect for nesting-sites with much excitement, calling, and tail-shaking, but under normal conditions the male never actually enters the nest.



Attitude of Pileated male when displaying.

Males are assiduous in feeding females during courtship, with the normal head-bobbing movements and regurgitation. Copulation takes place on a fairly wide branch or limb with the female remaining crouched through the pre-copulatory ceremony. Females will solicit copulation by adopting this crouched posture and slightly vibrating the wings.

METHODS OF TRAPPING

The Pileated is a very intelligent and active bird and is far harder to trap than most parrakeets. Basically there are three periods when trapping is possible :—

(1) When young birds are not fully independent of their parents they are much attracted by the calls of any mature birds.

(2) When the nesting-site selection is taking place, any strange Pileated will be attacked by a pair which have selected their nesting territory.

(3) During the period when winter flocks are formed food supplies are usually short and the birds can be trapped on grain.

Like many parrakeets, Pileateds show a reluctance to leave an injured companion ; in fact, the cries of an injured bird will attract others.

THE PILEATED PARRAKEET AS AN AVIARY BIRD

By virtue of its brilliant and unusual coloration and active disposition, the Pileated makes an attractive aviary bird. On the negative side of the balance it must be stated that it is very wild and seldom becomes even reasonably steady. Hand-reared birds are very friendly and docile and make fairly talented talkers. Its wildness is compensated somewhat by its agility and the birds rarely injure themselves in aviaries once they have come to accept wire-netting as an impassable barrier. For this reason, it is essential to cage newly-trapped birds in small, roofed cages until they get used to netting, otherwise head injuries are common and severe. It needs a fairly large aviary to be seen to advantage.

The basic food is three parts sunflower, two parts oats, and one part canary seed. Most pairs will consume a whole apple daily and require a good deal of greenstuff.

The species nests quite readily in an aviary, being single-brooded. When young are being reared an abundance of fruit, soft grass, green peas, lettuce, soaked bread, and boiled maize are essential. Like most Australian parrakeets, it is quite impossible to expect good results where the young are to be reared on hard seed. Interference and inspection of the nest is resented and hens even desert young if interfered with. Males are quite tolerant of the presence of their young, but breeding pairs can be very aggressive towards other birds.

Several hybrids have been produced. On record are hybrids with the Mealy, Common, and Stanley Rosellas.

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- (2) *Parrots and Parrot-like Birds*, by THE DUKE OF BEDFORD. All Pets Books, Inc., Fond du Lac, Wisconsin, 1954.
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THE NESTING OF THE PILEATED
PARRAKEET IN CALIFORNIA*(Purpureicephalus spurius)*

By DAVID M. WEST (Montebello, California, U.S.A.)

The Pileated Parrakeet, sometimes more happily termed the Red-capped Parrakeet, has been bred on many occasions here in California. These striking birds, with their very unusual coloration, are not favourites with some aviculturists. Their nervous disposition, and long curved beak, accompanied by a rather bizarre colour scheme have made them loved by some, disliked by some, and ignored by many.

The pair which nested for me in 1955 and again in 1956 were bred in 1952. The male was in complete colour in 1954, but at that time the female did not have her red cap, though otherwise completely coloured. It would appear from this that the male colours completely in two years, but that the female requires three years to assume complete adult plumage. I have not seen a previous reference to this fact, and possibly my experience is only an isolated case.

Because of their rather nervous disposition this pair were kept in a 26 ft. long aviary, which was about 3 feet wide and 8 feet high. The feeding and watering was done at the front and this allowed them to fly into the shelter while these operations were being carried out. This arrangement was a good one since the pair were able to observe the feeding process from a safe distance and learned that there was nothing to fear, and this has helped to tame them down. The hand-reared Pileated I have seen and owned were just as tame and confiding as a Princess Alexandra—but not so their nest-reared brothers and sisters !

In this flight there was also a pair of Turquoisines. From past experience Pileated have been found to be very tractable and Bourke's and other equally inoffensive species are quite happy when housed in large aviaries with Pileated. Despite their rather formidable-appearing beaks they are not aggressive with smaller birds and are not destructive to any but the very softest woods—at least, in my experience.

This particular pair have been in this aviary since 1953. At first the pair were nervous and flighty, and it took them a full year to settle down. Gradually the pair became more quiet and acted quite sensibly whenever I had to clean their aviary, etc.

During the 1954 season the pair became very active and indulged in a great deal of extra flying and calling. The male appeared more anxious to nest than the hen, but eventually nothing happened and the pair fell into an early moult.

In 1955 the male began calling and displaying to the hen in March. By the end of March both birds were flying about a great deal and the male was occasionally seen to feed the hen. In April the male began feeding the hen frequently and the pair were observed mating on two different occasions in the morning.

It was at this point that events took a rather unexpected turn. Instead of taking one of the two large boxes especially hung for them at the rear of the aviary the hen chose the nest-box intended for the pair of Turquoisines. This was not a large box, being about 12 inches high, 8 inches deep, and 6 inches wide. To top it all off the hen did not enter through the entrance hole but instead she entered through the roof of the box ! This was accomplished quite easily since the top of this box was split, and by doing a little pushing and nudging

she was able to separate the boards enough to enter. It had never entered my head that the Pileated would choose this box—which was hung in the front part of the aviary which the Pileated had always avoided like the plague! It might be added that the Turquoisines were so put out by all this unseemly house hunting that they nested in one of the large boxes provided for the Pileated.

The hen Pileated did all the house hunting herself, and the cock never appeared interested in any of the boxes provided. At this time it was considered unwise to take this small box down—because this might put the pair off and they would not nest at all—so with my fingers crossed they were allowed to proceed with their plans.

It was fully expected that the hen would sit like a feather, but she very agreeably surprised me by sitting very tightly and never coming off the nest except when absolutely necessary.

After incubation actually started the cock stopped calling and became very quiet. This seems to be a rather general happening and I have observed similar behaviour with other species. Doubtless it is a safeguard to avoid calling attention to the sitting hen.

Babies were heard on the twenty-fourth day after incubation started. The cock did not enter the nest-box, but he did feed the hen whenever she would come off the nest. Sometimes he would fly to the top of the nest and look in, and call to the hen, but the cock was never observed actually to enter the box. Because of the small size of the box, and the method of entrance, it was very nearly a physical impossibility.

The diet while feeding the young was as follows: a dish of mixed grains (millet, oats, canary, hemp) and a dish of sunflower was provided, along with two large dessert apples each day, one orange and a fresh ear of corn, and all the *poa annua* and *pyracantha* berries available.

For the first few days the young could be heard being fed, and then from the fifth day on it became apparent that all was not well. The hen would be off the nest a great deal, and neither bird appeared interested in the soaked bread, etc., that most parents with a family to feed appear anxious for. An inspection of the nest on the fifth day revealed that there had been four eggs laid and that three of the eggs had hatched, but that the young had been trampled to death—doubtless by the fact that the hen had literally to jump down into the nest from her mode of entrance.

The nest was taken down, and then completely scrubbed with strong wire brush, dipped into a disinfectant, and hung up again after a few days. However, the parents did not appear interested in the nest and there were no further attempts at nesting.

If this story has a moral it is doubtless centred around the absolute necessity of having a decent-sized nest-box for birds of this size.

In 1956 the pair reared a single youngster—having the misfortune to lose four young during a heatwave in May. This was a disappointment, but possibly in 1957 they will be lucky and rear a family of more appealing numbers.

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THE BREEDING OF THE CUBAN AMAZON PARROT (*Amazona leucocephala*)

By EDWARD BOOSEY (Keston, Kent, England)

We have two pairs of Cuban Amazon Parrots at the Keston Foreign Bird Farm, one of which successfully reared two young ones during the 1956 breeding season—so far as we know the first time the species has ever been bred in captivity.

As they are among the more rarely imported Amazons, I give the following very brief description for the benefit of those who may not be familiar with their appearance. Bright darkish green with black edges to the feathers, these being widest and most pronounced on the neck and forepart of the body. Face white with a beautiful patch of deep coral pink on the throat. A considerable amount of vinous colour on the belly and of rich blue in the wings. Bill, whitish. It is when the wings are partially opened and the shoulders thrust forward in display that one can fully appreciate the great beauty of these Amazons. They are perhaps a trifle smaller and slimmer than the well-known Blue-front.

We have had the four adults for about four years, and they were obviously young birds when they arrived, at which time they were desperately wild, but they have gradually calmed down and are now quite steady with people they know.

Pair number one were given a hang-up nest-box with natural bark on the front round the entrance hole and soon started spending quite long periods inside it. Then they seemed to lose interest, partly, I think, because their aviary was not in a sufficiently secluded position.

Pair number two, however, were given a grandfather clock type nest-box, also with natural bark on the front, and soon took to it, the hen starting to sit about the middle of May.

By the end of June the parents were eating much more than usual and on one or two occasions I thought I heard young ones being fed in the nest, so I was glad that I had already augmented their diet with a daily allowance of such extras as a cube of stale bread previously soaked in sweetened milk, as well as boiled potatoes and carrots and

plenty of seakale beet and apples. I also supplied flakes of boiled white fish, of which our Blue-fronted Amazons were so fond when rearing young, but it did not seem to appeal to the Cubans, so I discontinued it.

A couple of weeks or so later I found myself in the dilemma which must be familiar to those aviculturists who think as I do, that nesting birds are much best left well alone. Although the Cubans were still eating abnormally large quantities of food, there was a distinct charnel house smell in the vicinity of their aviary and I had horrible visions of one of the young ones dead in the nest and the survival of the others possibly hinging upon the removal of its decaying corpse! Incidentally, the origin of this stench was never discovered, but I think it must have been something that had died in a rather dense thicket close to the aviary. Nevertheless, at the time I felt sure it must emanate from the Cubans' nest-box, so I decided to shut the parents in the shelter and look in. A hurried glance in the rather dimly-lit depths of the grandfather clock box disclosed two very healthy-looking about half-grown young ones and I thought I caught a glimpse of a third, but this proved later to be incorrect.

The two youngsters continued to flourish and when they were within a week of fledging could be heard climbing about on the wire ladder inside the box, and they periodically came up to the entrance hole and looked out.

The first one to emerge came out on the last Sunday in August and proved to be a most perfect specimen with not a feather out of place and hardly distinguishable from its parents, except for the almost complete lack of vinous colouring on the lower breast and abdomen and the fact that, in the green areas of the plumage, the feathers were much less heavily bordered with black than in the adults.

Then the most extraordinary and I should have said quite unheard-of thing occurred: I thought I knew most of the strange and unpredictable things that birds will do, but the parent Cubans proceeded to spring a completely new one on me.

They seemed to be terribly excited at the emergence of their first-born and kept on flying about the aviary, then settling one each side of it and frantically preening its feathers, so I decided they needed complete quiet and left them. That was in the morning and I did not go near them until late afternoon of the same day, only to find that they had denuded the young one of every single head feather, giving it a vulturine appearance, but had mercifully left all the rest of its plumage intact and untouched.

The second one came out the following day, just as perfect a specimen as the first, and although the parents treated its appearance rather more calmly they were unable to resist the temptation to pluck its head—though only slightly this time—and the degrees of plucking



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[Alce Brooksbank

The two young Cuban Amazons, photographed a few days after fledging, are seen between their parents. Both left the nest in perfect feather, but within a few hours had had their heads plucked by their parents—the first to fledge (right-centre) coming off worst, while the second (left-centre) had only a few feathers removed. Now (about five weeks after being taken away from their parents) they have re-grown all their head feathers and are again as perfect as when they first left the nest.

To face p. 18.

are clearly shown in the photograph which was taken about a week after the young ones left the nest.

It is, alas, all too common among parrot-like birds to pluck their young ones while still *in* the nest, and leave off once they are out of it, but the Cubans' reversal of this process was totally unexpected and particularly infuriating—seeing how perfect the young ones were just a matter of a few hours before.

However, as I have said, the plucking fortunately did not include any of the body feathers, and now that the young ones have been away from their parents for just on five weeks they have re-grown all their head feathers and are once more as perfect as they were when they first left the nest, with the pink areas remarkably vivid for such young birds.

They are extremely healthy and lively, and are just starting to indulge in the usual cheerful morning and evening medley of Amazonian cries.

* * *

As described above, Edward Boosey has bred the Cuban Amazon Parrot (*Amazona leucocephala*). It is believed that this may be a first success.

Any member or reader knowing of a previous breeding of this species in Great Britain or Northern Ireland is requested to communicate at once with the Hon. Secretary.

* * *

BIRD NOTES FOR 1956

By J. DELACOUR (Los Angeles, California, U.S.A.)

Bird keeping in California is made so easy by climatic conditions that the rearing in my Los Angeles aviaries of many rare doves is nothing much to boast about. If I have not been more successful, it is because I am not free from a terrible disease of most aviculturists: I keep too many birds and they interfere with one another during the mating season, which lasts the greater part of the year in a good climate. To be really successful with doves, each pair of large size should be kept alone in their own aviary, where also one pair of small ones can be placed, as well as finches and little quails. I follow this rule for the rarest species, but I have to associate many pairs in larger flights. There are some good results, but also losses of eggs and young, and some pairs do not find enough privacy to breed. The following

species of ground pigeons were reared: Bartlett (4), Bleeding-heart (7), Mountain Witch (1), Chiriqui (4), Martinique (4), as well as some Brush Bronze-wing, Green-winged, Blue Ground, Cape, and silver Diamond Doves, and lots of Peruvians and Pigmies.

Twenty Gouldians and five Parson Finches were also reared, but most other finches were little successful, due to overcrowding. Among my new birds in Los Angeles are Fairy Bluebirds, Hooded Pittas, and an Emerald Starling.

The breeding season at Clères was handicapped by Mr. Fooks' illness during the spring. However, Pheasants of the following species were raised: Mikado, Elliot, Cheer, Horsfield, Swinhoe, Siamese Fireback, Red and Sonnerat's Junglefowl, Green and Black-winged Peafowl. Blue, Crowned and Stanley Cranes hatched, but were not reared. Many waterfowl bred, the most interesting young being 5 Andean Geese, 10 Philippine and 5 Hawaiian Mallards. The latter come from a pair which I had kept three years in Los Angeles without good results. There were young of several species of doves, particularly Brush Bronze-wings, and various parrakeets.

I spent the months of March, April, and June in South America first with an expedition of my Los Angeles County Museum to Brazil later on visiting Argentina, Chile, Peru, Ecuador and Colombia, in the company of Mr. and Mrs. Dillon Ripley, in the interests of the International Committee for Bird Preservation. In the course of this very interesting journey I had an opportunity to visit some collections of live birds. The new Zoo in Rio de Janeiro has very good aviaries of parrots and other large birds, both Brazilian and exotic, and a number of small birds kept very successfully, in ones or twos in separate cages. The large Buenos Aires Zoo, which had gone down during the Peron regime, is now being renovated. The small Zoo at Santiago contains many interesting Chilean species.

I saw some good private collections in the vicinity of Rio de Janeiro where Dr. E. Bérault keeps in a planted verandah a beautiful collection of Humming Birds, which he and his collectors obtain throughout Brazil. But the visit that I made with him to his friend Mr. F. Ruschi at Santa Teresa, Espirito Santo (the state just north of Rio) will remain in my memory as one of the greatest thrills that I ever had. Mr. Ruschi is a dedicated Brazilian nature-lover. He has single handed organized remarkable wild life preserves in his native state which possesses one of the most magnificent fauna and flora on earth unfortunately terribly ravaged by man during the last two hundred years. Mr. Ruschi knows birds as well as plants; his property contains museums, gardens, and aviaries of the greatest interest. In particular he has built an enormous flight, 300 × 100 feet and 30 feet high, where hundreds of Humming Birds live and breed freely including the lovely little Coquette. I saw fifteen on a bush, all reared

by one original pair. There are about twenty local species in this aviary, and one can also see several hundreds of wild Hummers in the garden. Dozens of them are always buzzing as they drink sugar-water from bottles hung around the verandah of the house, a delightful sight. Furthermore, a beautiful large (100 ft. long) house has been built, with a passage for visitors along its front, to accommodate the equatorial species from Amazonia which will not stand the cool nights of Santa Teresa (altitude 3,000 feet).

Both Mr. Ruschi and Dr. Bérault now entirely feed their Hummers on sugar- or honey-water and on quantities of fruit flies. Even the difficult, mostly insectivorous, species of *Phaetorui* and *Pygmornis* do perfectly well on such a diet.

* * *

BREEDING THE PAINTED QUAIL

By DAVID SETH-SMITH (Guildford, Surrey, England)

Mr. Walther Langberg has given us an interesting account of the breeding of the Painted Quail in Copenhagen but, as he does not give the scientific name of the bird, he might be referring to *Turnix varia*, one of the Hemipodes, which in Australia is known as the "Painted Quail". However, from his description, Mr. Langberg's bird is obviously *Excalfactoria chinensis*, a bird which I was one of the first to breed in England some fifty years ago. Since those early days this very attractive species seems to have been rarely imported until quite recently, and now that it is with us again no doubt aviculturists will be wanting to breed it, and my experience may be of some help.

Mr. Langberg writes : " Many hens are inclined to lay their eggs all over the place, or to scatter them around after laying, before they eventually decide to lay in the nest ; some hens, indeed, never seem to settle down to serious nesting operations and continue to lay their eggs broadcast." This is, I believe, the experience of many who have kept these birds in the ordinary type of aviary with a sanded floor, and perhaps very little grass in the flight.

My aviaries were constructed with fairly large outside flights, some 12 or 15 feet each way, the height being immaterial so far as quails are concerned, and the grass was allowed to grow long. As soon as the quails were allowed into the paddock in the spring they commenced to form tunnels through the grass, and at the end of one such tunnel the hen would make her nest, perfectly hidden from all prying eyes. One could only guess where the nest was situated by watching the hen appear and disappear into a tunnel and notice the movement of the grass as she proceeded along it. It is advisable not to be too inquisitive and not on any account to disturb the grass to examine

the nest, but patiently to wait until, on about the seventeenth or eighteenth day after you first noticed her disappearance, she is seen to appear with her brood of the smallest and loveliest chicks you can imagine. You will have noticed her appearance from time to time at the feeding place during incubation to satisfy you that all is going well.

I made a small portable run, about 5 feet by 3 feet, of 9 in. boards at the sides and wire netting top, into which I gently drove the hen and her brood so that they could have special care and attention for the first week or so of their lives. A piece of waterproof material was placed over part of this for shelter and part of the top made to open for feeding. When quite young there is no food so good as ants' eggs, fresh and newly dug up. I used to take a large tin and a trowel and collect a supply that would last for days and I gave a good supply each day though, as Mr. Langberg says, the chicks very soon begin to take small seeds as well as insectivorous soft food.

In any type of aviary, even in a cage, these little quails will lay plenty of eggs—in fact far too many—but, in my experience, without the chance of hiding her nest in the grass the hen is unlikely to sit; but given the conditions I have described, success is pretty certain, barring such accidents as floods! And my experience of these birds was not confined to just one pair; I have had several and all behaved in the same way, including examples of the Australian race, *E. lineata*, a slightly smaller and darker race than the type. In Australia this is known as the "King Quail". Although newly imported, these bred just as freely as the others when given the right conditions, and the chicks were at first almost black. Two broods of four or five were reared each season.

One difficulty with the non-perching quails when kept in outdoor aviaries is that, although they are generally perfectly tame, they are liable at times suddenly to panic, especially at night, and to fly up like rockets from the ground, hitting the top of the aviary and being either scalped or killed outright. Owls or cats are probably to blame, but whatever the cause efforts must be made to prevent it either by cutting the flight-feathers of one wing or, perhaps better still, pinioning. In the wild state these birds rarely fly, only doing so to escape from predators or to travel from one district to another, so it is no hardship whatever if they are prevented from flying altogether, and it in no way detracts from their appearance.

* * *

ON BREEDING WHISTLING DUCKS

By S. T. JOHNSTONE (Slimbridge, Glos., England)

We are fortunate at the New Grounds in having representatives of all species of this most interesting group of the Anatidae which link the characteristics of swans, geese, and ducks. As in the former two, they have reticulated epithelium on the tarsi, are long-necked, and the plumage of both sexes is similar. *Arborea* in particular has been noted to graze but they mostly feed as do ducks, and *bicolor* and *arcuata* dive a great deal. There are at the time of writing examples of the following eight forms :—

- Fulvous Whistling Duck (*Dendrocygna bicolor*)
- Wandering Whistling Duck (*Dendrocygna arcuata*)
- Javan Whistling Duck (*Dendrocygna javanica*)
- Eyton's Whistling Duck (*Dendrocygna eytoni*)
- White-faced Whistling Duck (*Dendrocygna viduata*)
- Southern Red-billed Whistling Duck (*Dendrocygna autumnalis*
autumnalis)
- Black-billed Whistling Duck (*Dendrocygna arborea*)
- Spotted Whistling Duck (*Dendrocygna guttata*)

Of these, five species have bred at Slimbridge. Five species are kept full-winged and seem to enjoy liberty a great deal ; they fly often and quite high. Unfortunately, although the main flock have stayed with us, odd pairs have strayed away. They have a predilection for perching on chimneys, roofs, and gateposts and we have erected perching posts especially for them.

From their behaviour in captivity one would have thought that, in their natural habitat, *arborea* and *arcuata* were inveterate tree nesters. Our birds invariably use the barrels and boxes provided for Carolinas. But apparently this is not the case (Delacour, *The Waterfowl of the World*, Vol. I). We have found that *autumnalis* likes to nest in much denser cover than other members of the group, preferably under thick bramble and brushwood. Nevertheless, although so difficult for us to locate, the eggs suffer greatly from the attention of vermin, aided no doubt by the fact that the female leaves the eggs uncovered during the whole period of laying. The clutches are relatively large (from nine to sixteen) and fecundity is a strong point : a pair of *autumnalis* laid seventy-two eggs in one season. The eggs are invariably white and the shells are of roughish texture—so that we have found it difficult to distinguish those of the bantams used as substitutes. Both sexes incubate and the nest is never left unattended once incubation has begun. Perhaps for this reason there is no lining of the nest with down.

Our records of the various incubation periods are as follows :—

<i>D. bicolor</i>	.	.	26 days (30–32 days)
<i>D. arcuata</i>	.	.	28 days (about 30 days)
<i>D. autumnalis</i>	.	.	26 days (27 days)
<i>D. viduata</i>	.	.	26 days (28–30 days)
<i>D. arborea</i>	.	.	30 days (30 days)

It is noteworthy that four of the five species seem to have slightly shorter incubation periods than those given by Delacour (shown here in parenthesis).

Fertility and hatchability of the specimens at the New Grounds are high compared with other groups. An interesting point has been observed at hatching time ; a relatively high percentage of eggs have the shell pipped near the “equator”, an observation that has not been noted in other genera.

The day-old young of any species of whistling duck are particularly attractive. The characteristic feature of their downy pattern is the light band circumventing the occiput and dividing off the lower edge of the dark cap to form the cross stroke of a “T” of which the down stroke carries down the back of the neck.

By far the most striking is that of *autumnalis* which is clad in a wasp-like contrast of vivid yellow and black. *Viduata* and *arborea* have similar patterns, but of considerably less brilliance. *Bicolor* and *arcuata* are purplish-grey shading to an almost black cap, the latter being distinguishable by a light supraorbital stripe.

It has been our experience that all birds of the genus are extremely apprehensive if touched and from day-old duckling to adult when handled they give vent to a high-pitched scream. Nevertheless, they are, when fully grown, very tame and have an insatiable curiosity in all things human.

The ducklings are particularly unhappy in cold, wet weather and appear to thrive only if the temperature is moderate. They have an idiosyncrasy that causes them a deal of discomfort in that (even when they are supplied with a minimum of drinking water) they will carry their mash to the water, immerse their bills, and, sucking water up at the nail, eject it through the sides together with some of the mash. Thus they contrive to cover themselves with a sticky mess and we have lost a number of ducklings as a result of this condition. If given enough water in which to bath and swim they do attempt to wash off the paste, but we have found that it is necessary to supply artificial heat in the form of infra-red lamps. The aforementioned state has occurred in three of the five species reared at the New Grounds, although it is not the inevitable sequence of events and many broods have been reared without any duckling achieving this appearance of emaciated dejection.

The fragility of the young does not make for successful rearing if left at large with the parent birds. Similarly, if caught up and separated from them the babies do not thrive. But if one can manage to catch the adults up as well and put them in an aviary there is an excellent chance of their survival, a fact we have demonstrated on several occasions.

The Southern Red-billed Whistling Ducks are by far the most fascinating of the group; they have an abiding interest in all our activities—if able they will always attend the uncaging of newly arrived birds. Another form of entertainment indulged in, a rather troublesome one, is the enjoyment they derive from trundling the eggs out of other ducks' nests.

* * *

NOTES ON THE CITRON-CRESTED COCKATOO

S. B. KENDALL (Chertsey, Surrey, England)

Readers may remember my account of the breeding of the Citron-crested Cockatoos, whose picture appears in this number. In the September–October issue of 1955 I described the events up to the time when the young fledged. Although I disposed of the young I still have the adult pair and they had at least partial breeding success again in 1956. Since September, 1955, there were, however, a series of mishaps from which some avicultural morals can be drawn and an account of which may be of interest to those of our members who are trying to breed the larger parrot-like species.

The first mishap concerned the adult male of the breeding pair. On the 23rd of September, 1955, I began to think (perhaps wrongly) that the young male was getting into trouble with his parents, which I accordingly removed to the adjacent (smaller) flight. As, however, it appeared that the young were eating very little during that day, I reunited the family by putting all together in the smaller flight. Here they remained until 5th October. On that evening I came home at dusk to find the whole party sitting outside in the unprotected flight in torrential rain. I entered the flight to try to move them into the shelter; a lot of very large birds panicked in a rather small and over-perched flight and next morning the old male had a hiped wing. He seemed to have damaged the terminal joint when flying hard between the perches and has never fully recovered, although he can fly short distances and is able to mate without any difficulty. The moral here (which, of course, I knew as well as anyone) is not to enter aviaries at dusk unless the birds are very accustomed to the position of the perches.

The second mishap occurred after I had finally separated adults and young. Owing to the fact that the young hen seemed extremely slow

in becoming self-supporting, I left the parents in the adjoining aviary, separated in one place by a single layer of 2 in. chain-link netting. Feeding through the wires gradually ceased and the young were due to be sent to their new owner on 24th November. I left them, on that morning, in perfect condition and appearance and arranged to come home at lunch-time to put them in the travelling-boxes. I arrived to find the aviary (so it appeared to my appalled eye) a welter of blood with the baby hen savagely bitten on the foot. Fortunately a good and rapid recovery took place and, by the report of the killing of a young Citron-crest by the parents at Whipsnade, it seems that I was lucky to have such limited damage. The moral is, of course, that if an apparently happy family group is broken up, great care must be taken to ensure that the breeding pair and the young are properly separated. The old birds will treat the young as they would any other potential enemy of the same species. E. N. T. Vane, who saw the arrangements shortly before the accident occurred, will remember warning the owner as to what might happen.

The third mishap is sufficiently near still to influence the course of events this season. During the early spring of 1956 the cockies were making desperate attempts to start nesting and their hole-digging in the aviary floor assumed major proportions. On 7th April they were switched into the breeding aviary. On 7th May both were in the barrel at night and I imagine that an egg was laid at that time. On the morning of 10th May, the female was in distress in the shelter, unable to fly and showing all the signs of egg-binding. (How providential it is that egg-bound hens come out of the nesting-boxes.) She was at once brought into the house and a heroic temperature raised in the smallest bedroom with the aid of all available domestic heating appliances. Shortly before six at night she laid an egg on the floor of the parrot cage where she was confined. The egg appeared thin-shelled, although otherwise perfect, and was put aside for measuring while the owner celebrated in the usual way. Unfortunately, by the next morning it had dehydrated and collapsed, so that accurate measurement was impossible. The hen Citron-crest made a very rapid recovery and was returned to her aviary on the evening of the following day. I had qualms about doing this, but was influenced by the fact that the cock had remained guarding the first-laid egg for the thirty-six hours during which the hen had been absent from the flight and by the belief that there were no more eggs to be laid.

The pair has incubated steadily ever since and at the time of writing (10th June, 1956) should have hatched. I am hopeful of the outcome but not optimistic. I am not sure that there is any moral in this story. As far as I am aware nobody knows why birds become egg-bound; the condition certainly seems to involve the temporary paralysis of more than the oviduct itself and there is some sort of connection with

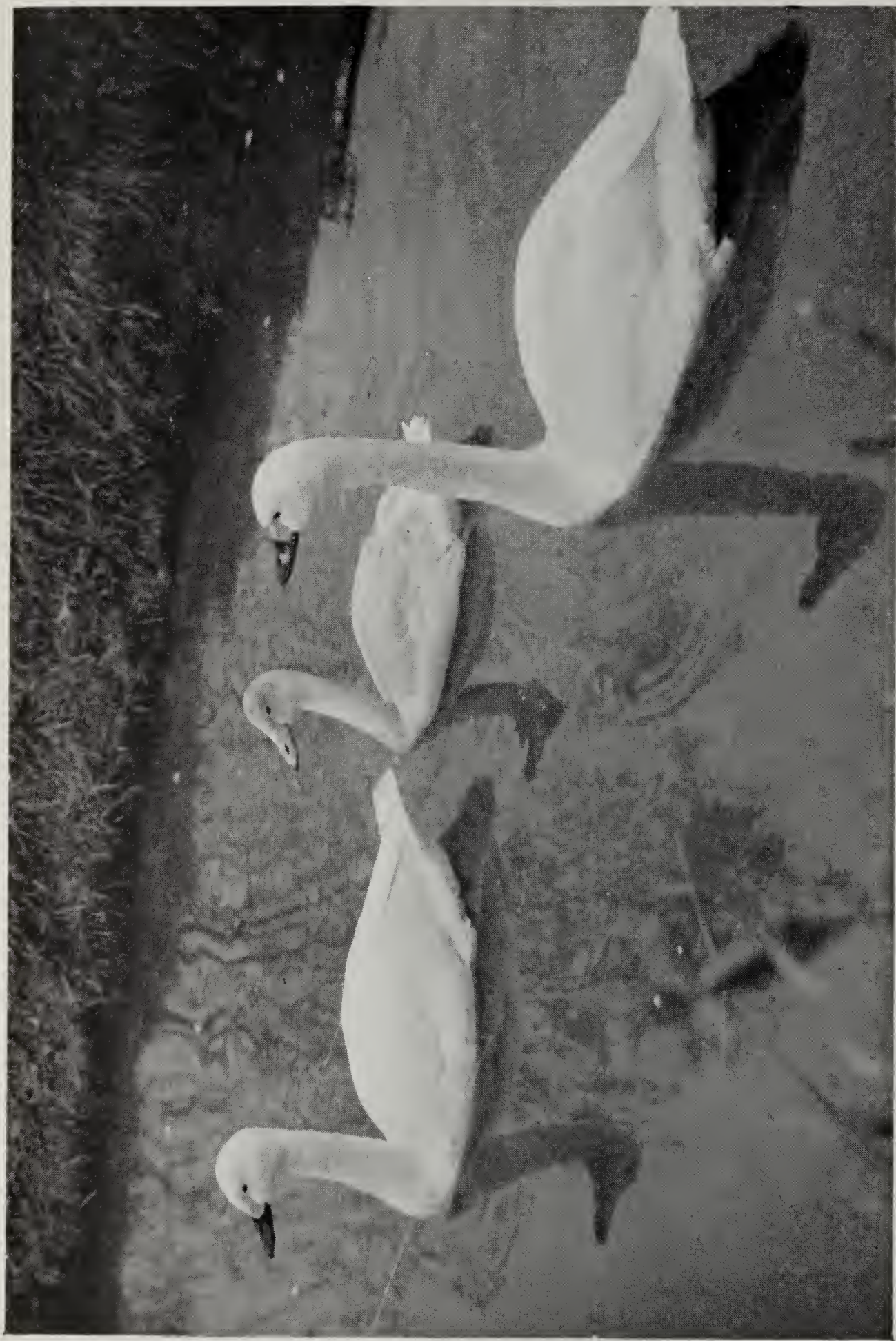


[Tom Spence

CITRON-CRESTED COCKATOOS AND YOUNG.

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To face p. 26.



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BEWICK'S SWANS AND CYGNET.

[J. V. Beer

cold weather, at least as far as aviary birds are concerned. I do not think it would be practicable to hold back the Citron-crests from nesting longer than I did.

Anyway, I still have my hen.

* * *

BREEDING OF BEWICK'S SWANS

By S. T. JOHNSTONE (Slimbridge, Glos., England)

We are glad to report that our Bewick's Swans have nested, hatched, and reared young at the New Grounds. It is understood that the species occurred at Woburn before 1914, but we know of no other record and unfortunately we have no details of the first record.

The male of the pair at the Wildfowl Trust appeared on our marsh in November, 1948. It was a bird of the year, and, having lived with the wild geese for some days, ventured into our rushy pen. Eventually he was induced to come and feed with our tame birds and by degrees enticed into a trap. For eighteen months he lived with our Whistling Swans and then we managed to obtain a wild-caught female from Holland. Owing to shortage of space and the belief that these birds were unlikely breeders, they were placed in a rather unattractive pen measuring some 15 yards by 20 yards in size with a very small area of water by accepted standards.

The pair showed no signs of breeding or even mating before 1956 but on 2nd June it was noticed that there were the rudiments of a nest constructed of the rush growing in the pen. The following day both birds were observed building, though they still remained as shy and retiring as ever. The female was seen sitting and shaping the nest on successive days and then to our delight on 6th June we found the first egg. Three eggs formed the clutch and the average weight was 265 gm. and dimensions were 118 mm. by 82 mm. The male was never observed to take part in incubation and indeed, compared with other swans, did not offer very great defence of his consort when the nest was approached.

The first cygnet hatched on the twenty-ninth day and the second in thirty days. The third egg was infertile.

The cygnets are enchanting little things of white down with a steel-blue overall appearance, their bills and feet a delicate pink. Much to their parents' apprehension they became quite tame and would approach quite close when their food was brought. Their diet consists of Spratts' Maxco reinforced with an extra 8 per cent protein and

every kind of pond and water weed obtainable—duckweed, water-cress, water celery, horned, curly and Canadian pondweeds, hornwort, and grass. In spite of all efforts one soon fell behind and eventually died when six weeks old. The remaining cygnet continued to thrive and showed signs of feathering when eight weeks old. By sixteen weeks the bird was fully feathered, the plumage being a dirty white, considerably lighter than that reported for Whistling and Trumpeters. The bill remained pink with the exception of the tip. The legs have lost their flesh colour and are now blotched with grey.

* * *

SOUTH-EAST ASIA NOTES

By S. DILLON RIPLEY (Litchfield, Conn., U.S.A.)

My wife and I spent five months primarily in Indonesia in the summer and autumn of 1954. It was a trip made more vivid for me by the fact that I had spent fourteen months collecting birds in New Guinea and Sumatra in 1938 and 1939. An account of some of my experiences looking for live birds during those trips appeared in the *AVICULTURAL MAGAZINE* in 1938 and 1940. Naturally to a returning visitor the main mental preoccupation is with the changes which exist on every hand, these and the aura of speed which hangs over the world to-day, rendering every impression more fleeting, making it so much harder to savour things, to drink in the surroundings.

When I reached New Guinea in the autumn of 1937, we had been ten months out from New York on a small schooner. We were more or less attuned to the pace of our surroundings. Now one can fly KLM to Djakarta or Biak in under three days from New York. It takes days in Java, weeks in New Guinea to get over a transition like that.

Our first stop in South-East Asia was Bangkok, where we spent three days, primarily to rest up after the long flight from Europe. I was very much pleased, however, to meet a distinguished Thai doctor and naturalist, Dr. Boonsong Lekagul, who among his manifold other interests, is developing the first contemporary Siamese Zoo. We unfortunately did not get to the Zoo while we were in Bangkok, but I understand it has made a good start with Gaur, deer of several species, tiger, and other mammals. Apparently birds are not much in evidence as yet. But there is promise for the future in Dr. Boonsong's energy. The bird market in Bangkok is most disappointing, a few miserable huts along a canal near Wireless Road. Mostly the dealers sell poultry and domestic pigeons, but there were a few doves, some jungle fowl, and munias and weaver birds. Fortunately for them

wild birds are often bought in Buddhist countries to be released for merit, a welcome deliverance to such poorly kept creatures. A tame Adjutant Stork kept at liberty by one of the shopkeepers provided the single exotic note in the assemblage.

Our next stop was Djakarta, now a vast city suffering the intense bangs of post-war overcrowding. Large suburban cities, such as the new Kemajoran, are being hastily put up in the outskirts in an effort to keep pace with the growing pains. The pre-war Zoo still exists in a small park in a residential part of the city. The park is brightly illuminated and has cinema, games of chance, tea shops, etc., so that the atmosphere is rather carnival-like. We avoided it on a friend's advice, but did visit the bird market, which is in the general produce market area. Perhaps because it was raining, our general impression was a poor one. Sloshing about over heaps of manure and rotting vegetation, staring up into the dank recesses of tiny huts at nests of dirty cages packed to bursting with huddled, frightened, soiled little birds, was an unhappy experience.

The variety was considerable, as bulbuls of several species, babblers, barbets, starlings, mynahs, munias, and weaverbirds were there. We saw several Green Javan Jungle Fowl also, but they were all cocks, evidently trapped by the use of a caged captive female. One of our friends who lived in Djakarta had been buying a number of bulbuls, dyal thrushes, and other common cage birds, but the mortality rate was high, I am afraid due to the conditions of trapping and keeping the birds in the market.

We spent one or two days driving about in Java, and managed to see a few local birds. It always seems strange to see Java Sparrows flying about at liberty, as they do in the palace enclosure in Djogjakarta. They look as if they must have just that moment escaped from a cage. We saw hawks of several species. Brahminy Kites, *Haliastur*, and the Serpent Eagle, *Spilornis*, were very common all along the coasts, and in the hills I saw a small falcon. Minivets were common in the lower hills, as were bulbuls, coucals, or crow pheasants, the Golden Oriole, shrikes, tits, the White-bellied Swiftlet, and the Pink-headed Flowerpecker. Nearer the towns mynahs and crows and an occasional drongo were almost the only bird life visible. The human population is so great on Java and so constantly increasing that it seems hard to imagine that birds of any sort can withstand the hordes of children armed with catapults much longer!

The Zoo in Surabaya was a delight, still as good as ever. It must be by far the best Zoo in South-East Asia, if not in all Asia. It certainly is better than the Calcutta Zoo, and certainly better than anything in Japan, although I am not up to date on what the last few years have produced in that country.

The Surabaya Zoo has the best kept small birds that I have seen

anywhere in the tropics in a public garden. Such difficult species as woodpeckers, the Golden-backed, pittas, barbets (three species) forktails, laughing thrushes, babblers, among these *Turdinus* and *Kenopia*, rainforest species, and hanging lorikeets, all were apparently thriving in roomy, beautifully planted aviaries, with adequate sheltered quarters in the rear, and fresh, clean pans of food and water, always a problem in a hot climate. The present success of this Zoo is a heritage from two clever Europeans, brothers, who had worked for the Gardens for years, and now I understand have emigrated to New Zealand. They had trained the keepers well, and there was no visible slackening up of effort. Six magnificent Komodo Giant Monitor Lizards or "Dragons" (two are now at the Bronx Zoo in New York), two fine Sumatra tigers, orang-utans, and a Sumatran elephant were notable parts of the menagerie.

Going east we voyaged into the Moluccas or Spice Islands, via the port of Makassar, Celebes. This grotesque swastika-shaped island has now been officially re-named Sulawesi. In Makassar I was disturbed to hear that in 1953 some 200 or more skins of the Greater Bird of Paradise, *Paradisea apoda*, from the Aru Islands, which are also a part of the Republic of Indonesia, had been shipped out of Makassar by a local Chinese trader. These skins are said to be bought locally from crewmen from the coastal steamers coming from the Aru Islands for about 40 Rupiahs each. This sum is equivalent to anything from \$1.50 to \$3.30, depending on official or open market rates of exchange. It was also reported that the skins could be sold for approximately \$10.40 each in Paris or West Germany.

The only pet birds here and farther east seem to be Cockatoos, mostly Umbrella-fronted (*C. alba*), and an occasional Moluccan (*C. moluccensis*), which latter species if obtainable are very expensive, and Eclectus Parrots, with occasional lorries, crimson, or green-winged. All these parrot-like birds are caught as young at the nest and reared on gummy, boiled rice, coconut, and coconut milk, and maize. They obviously survive, but there must be a considerable mortality among the young. As these species are Moluccan in origin, they are brought to Makassar and Java on the coastal steamers by sailors.

In the Moluccas themselves we spent three months on Ternate, Halmahera, Tidore, Batjan, and farther east on Misool. All these islands are as beautiful and unspoiled as ever, their forests largely uncut, except around towns like Ternate, life being much as it has been for centuries. It is still possible to walk out of the town of Labuha on Batjan, for example, where Alfred Russell Wallace stopped to see the Sultan in the 1850's, and to reach jungle, real jungle on foot, after a couple of hours. And it is still possible in this jungle to see Wallace's Standard-wing Bird of Paradise, that curious and

all-proportioned looking bird, which Wallace had first seen on the day when he stood outside the Sultan's palace, and Ali his faithful assistant ran up with one attached to his belt.

But alas, there is not a living soul on Batjan to-day who seems to know or care about birds of any sort. During our five weeks on that island we asked diligently after local hunters or woodsmen, only to be told that all the principal ones were too old or had died off. No one has ever heard of trapping birds except parrots or cockatoos in their nest holes. No one could do a thing to help us. Perhaps it is just as well that the inhabitants are as indifferent as they are. Certainly nothing is likely to change in a hurry in the Moluccas. The basic driving forces of man, hunger, love, fear, seem somehow in abeyance here, at least the first and the last. Love, of course, triumphs, but for some mysterious reason the population rate is not as staggering as farther west on Java.

At least, though, there are the islands. When typical Western impatience is about to get the best of one, when some delay or exhibition of human frailty or inertia is nearly overwhelming, it is usually only necessary to lift one's eyes up towards the sky, to look out over the majestic sweep of sea and sky and pointed volcanic-cone islands, to be glad to be there. The vivid greens of the islands, the multi-colored blues of the sky and the sea, and the incredible panoplied clouds are all there, unchanging, always beautiful. Those sights and the birds we saw, shy, glimpsed often with difficulty, made our trip worthwhile. Much of the rest of travel in these exotic lands has become so burdensome and wearying that I doubt that many would wish to share such a voyage to-day. In many ways it seems better by far to settle down in an armchair with Wallace or Forbes or Guillemard or the others, and read of it all "far away and long ago".

* * *

LONDON ZOO NOTES

By J. J. YEALLAND

Arrivals during November and December, 1956, include two species and two sub-species new to the Collection.

These are a Finsch's Conure (*Aratinga finschi*) presented by Mr. A. A. Prestwich; two Kansu Babblers (*Trochalopteron sukatschewi*), and three Fohkien Grey-headed Crow-Tits (*Psittiparus gularis fokiensis*) presented by Dr. K. C. Searle, who also sent a Ruby-throated Warbler and four Persian Chukors given by Professor E. Boswell.

Finsch's Conure, first described by Salvin in the *Ibis* of 1871, is one of the Central American Conures inhabiting southern Nicaragua and western Panama. The Kansu Babbler was first described in 1891 by Berezowski and Bianchi, being found by them in the Kansu Province of north-western China. There is only one skin of this bird in the British Museum. It appears to have had no English name, and the Kansu Babbler seems preferable to Sukatschew's Babbler.

The Chukors are the race *Alectoris graeca werae* of western and south-western Persia and the adjoining parts of Iraq.

The Crow-Tits or Parrot-bills (Paradoxornithidæ) are comparatively little known to aviculturists here, and only three species have previously been kept in the Society's Collection. They range from the Himalayas to Indo-China and China, living in reed beds, bamboo and grass jungle. The food consists of insects and their larvae, some seeds, and buds. The birds tear off the sheaths of reed or bamboo stems to expose the insect life sheltering beneath; they also open the stems themselves, and it is here that we see the purpose of the Crow-Tits' powerful bills. Lynes, writing of Heude's Crow-Tit says, "The rustling, crunching and tearing noises made by a party of birds so engaged may frequently be heard before catching sight of them."

Writing in the AVICULTURAL MAGAZINE (1928, p. 30), Mr. H. C. Eustace says of Webb's Crow-Tit that it is "kept by the Chinese only on account of its ability to be trained for fighting . . . Although when trained they become very desperate fighters, the wild birds are very peaceable and gentle, and are quite safe inmates for any mixed aviary". The Bearded Tit was once considered to belong to this Family.

Other arrivals are a Silver-eared Mesia, an Orange-cheeked Waxbill and a Chestnut-breasted Finch, presented by Mrs. Y. Channing; a Green-cheeked Parrot by Mr. L. W. R. Jones; a Malachite-shouldered Fruitsucker (*Chloropsis sonnerati zosterops*) and a Black-winged Grackle by Mr. G. Newmark.

Another Swainson's \times Red-collared Lorikeet has been bred at the Parrot House. The Black-footed Penguins and Cereopsis Geese are nesting.

COUNCIL MEETING

A Council Meeting was held on 27th November, 1956, in the Council Room, Zoological Society of London.

* * *

OFFICERS FOR 1957

There were the following retirements and appointments.

Council : Captain A. A. Clarence, Mr. F. T. Jones, and Mr. K. A. Norris retired by seniority.

Mr. G. S. Mottershead, Mr. C. M. Payne, and Mr. J. J. Yealland were elected to fill the vacancies.

* * *

SOCIETY'S MEDAL

The Society's Medal was awarded to Mr. C. M. Payne, for breeding the Evening Grosbeak (*Hesperiphona vespertina*).

ARTHUR A. PRESTWICH,
Hon. Secretary.

* * *

AVICULTURAL SOCIETY OF AMERICA

We are delighted to report that our sister Society continues to flourish, with an ever-increasing membership.

The Principal Officers are now :—

Jean Delacour	.	.	Honorary President
Don Rowland	.	.	President
Otis Wade	.	.	Vice-President and Secretary
C. H. Melvin	.	.	Assistant Secretary
Alexander Wiederseder	.	.	Treasurer

A. A. P.

* * *

BRITISH AVICULTURISTS' CLUB

The fifty-fourth meeting of the Club was held at the Rembrandt Hotel, Thurloe Place, South Kensington, S.W. 7, on Tuesday, 27th November, 1956, following a dinner at 7 p.m.

Chairman : Miss P. Barclay-Smith.

Members of the Club : P. C. Bath, Hylton Blythe, A. W. Bolton, Miss K. Bonner, J. O. D'eath, A. W. E. Fletcher, Miss S. A. Fothergill, Miss E. G. Ganner, Dr. E. F. Gleadow, F. Grant, A. V. Griffiths, H. J. Harman, M. S. Henderson, Dr. E. Hindle, Miss S. I. Hobday, G. T. Iles, F. T. Jones, Miss E. M. Knobel, F. Mosford, G. S. Mottershead, K. A. Norris, A. A. Prestwich, D. H. S. Risdon, S. Sanderson,

R. C. J. Sawyer, D. Seth-Smith, H. A. Snazle, A. C. Soanes, E. O. Squire, P. Sutton, Mrs. P. V. Upton, E. N. T. Vane, N. S. Walker.

Guest of the Club : C. S. Webb.

Guests : J. Bailey, J. M. Bowing, S. A. Croucher, Mrs. S. A. Croucher, M. D. Gill, Mrs. E. F. Gleadow, Mrs. F. Grant, Dr. W. C. Osman Hill, Mrs. W. C. Osman Hill, Captain R. S. de Q. Quincey, Mrs. D. Seth-Smith, Mrs. P. Sutton, Mrs. E. N. T. Vane, Mrs. C. S. Webb, M. Weber, Miss F. R. Wood.

Members of the Club, 35 ; guests, 16 ; total, 51.

After the Loyal Toast the Chairman proposed the health, happiness and future good fortune of Mr. and Mrs. Cecil Webb who were at the point of leaving for Kenya.

"Webbie" in response said that while he and his wife were going to live in Kenya they had every intention of returning to England at the first opportunity allowed and that on those occasions they hoped to attend Club dinners and so meet many old friends.

The dinner was followed by a *Conversazione*.

* * *

The fifty-fifth meeting of the Club was held at the Rembrandt Hotel, Thurloe Place, South Kensington, S.W. 7, on Wednesday 9th January, 1957, following a dinner at 7 p.m.

Chairman : Miss P. Barclay-Smith.

Members of the Club : Miss J. Barnes, A. W. Bolton, J. H. Briant, W. D. Cummings, Mrs. H. Denny, A. V. Griffiths, H. J. Harman, Dr. E. Hindle, Major V. Dilwyn Jones, Miss E. M. Knobel, Miss M. H. Knobel-Harman, P. H. Maxwell, A. F. Moody, F. Mosford, H. Murray, A. A. Prestwich, D. H. S. Risdon, H. A. Snazle, E. N. T. Vane.

Guests : J. Bailey, R. Bufton, S. A. Croucher, Mrs. S. A. Croucher, Captain R. S. de Q. Quincey, Miss H. Frampton, Mrs. A. V. Griffiths, Mrs. V. Dilwyn Jones, Mrs. A. F. Moody, W. R. Partridge, Mrs. W. R. Partridge, C. M. Payne, Mrs. C. M. Payne, D. C. Rogers, Mrs. E. N. T. Vane, A. N. Other.

Members of the Club, 20 ; guests, 16 ; total, 36.

After the Loyal Toast the Chairman presented the Society's Medal to Mr. Claude Payne for breeding the Evening Grosbeak.

Mrs. H. Denny showed her unique pair of Perfect Lorikeets.

The dinner was followed by a *Conversazione*.

The next meeting of the Club is on Wednesday, **13th March**.

ARTHUR A. PRESTWICH,
Hon. Secretary.

* * *

NEWS AND VIEWS

Sir Edward Hallstrom has consented to be Patron of the Avicultural Society of Australia.

* * *

Breeding reports. F. E. B. Johnson, Temminck's Tragopan, two reared ; B. M. Killick, a nest of four Abyssinian Lovebirds reared.

* * *

George S. Mottershead, Director-Secretary, Chester Zoo (North of England Zoological Society), has been elected Vice-President, International Union of Directors of Zoological Gardens.

* * *

Vogelpark Avifauna, Alphen a.d. Rijn, Holland, report the successful breeding of their Greater Patagonian Conures ; three young reared. This is possibly a world first success.

* * *

Cecil S. Webb has relinquished his position as Superintendent, Dublin Zoo (Royal Zoological Society of Ireland), and, with his wife, will shortly take up residence in Kenya.

* * *

Dr. Sten Bergman, Stockholm, reports the successful breeding of his King Birds of Paradise ; two young ones now five months old. A full account of this remarkable achievement will appear in an early number of the Magazine.

* * *

In the previous number of the Magazine (p. 231) reference was made to the successful breeding of the Cuban Amazon at *Brambletye*. To avoid the possibility of confusion, more particularly among overseas readers, it should perhaps be mentioned that *Brambletye* is the residence part of the Keston Foreign Bird Farm.

* * *

The Silver Medal awarded annually by the Avicultural Society of South Australia, for the most outstanding breeding achievement of the year, will in future be known as the "Simon Harvey Memorial Medal". The medal for 1956 has been awarded to Mr. Bev. Thomas for breeding the Tawny Frogmouth.

* * *

Dr. Alan Lendon sends news of Sir Edward Hallstrom's birds. He reports : "Golden-shouldered have five half-grown young in the nest. The hybrid Yellow-cheeked \times Cactus Conures are now about nine months old and are very like their mother. Sir Edward also has some two dozen Blue-cheeked Rosellas (*P. amathusia*), the far northern variety of the Mealy Rosella."

* * *

The Royal Zoological Society of South Australia reports forty-one species of birds bred during 1955-56. These include Common Rheas (four), Black Swan (five), Eastern Swamp Hen (three), Tasmania Native Hen (two), Golden-crowned Conure (one), Crimson-winged Parrakeet (four), Barraband's Parrakeet (four), Queen Alexandra's Parrakeet (five), Brown's Parrakeet (eight), Elegant (six), Splendid (two), and Gouldian Finch (nine).

* * *

Roland A. Muller and his son are rapidly forming a good collection of Australian parrakeets at Santee, California. Last season they successfully reared Golden-mantled Rosella, Many-coloured, Red rump, Princess of Wales', Bourke's, Barnard's, and Elegant. Young were hatched but not reared by Stanley, Hooded, and Yellow-rumped Parrakeets. About two months ago the Hooded deserted their three half-grown young; they have further young in the nest at the present time (24th December).

* * *

L. J. Bettison, Oliver, British Columbia, records a successful breeding season. Many-coloured Parrakeet, two hatched, one reared; Love birds, Peach-faced, two young; Masked, eight; Fischer's, six; British Greenfinch, three nests of young from one pair; Golden-breasted Waxbill, two young; Black-headed Gouldian, nests of six, two, and five young, from one pair; Golden Sparrow, three nest from one pair; Cut-throat Finch, three nests with an average of three, and many Bengalese and Zebra Finches. Nested unsuccessfully Purple Finch, Evening Grosbeak, Cordon-bleu, Cirl Bunting, and Bronze-winged Pigeon.

* * *

Sir Edward Hallstrom writes: "I am having continued success with the lutino Indian Ring-necks. At present fourteen pairs have gone to nest. There are two more Blue and Yellow Macaws and another Glossy Black Cockatoo—on this occasion completely reared by both parents. With the previous one, the female completed the rearing alone. One very interesting item of news is that a pair of Ribbon-tailed Birds of Paradise appear to have mated and are using a nest that was built by the female prior to the male being introduced. For a long time she would not accept the male but now they are very busy. In New Guinea another three Salvadori's Ducks came along. One was missing after several weeks but the other two are now nearly adult—making, in all, five bred in my sanctuary there."

* * *

Dr. Brian Kendall kindly sends further news of his birds. He writes: "Just before I went away for my holidays there were (probably) two young Orange-crests in the nest. When I came back

there was one well-feathered baby with a delightful little crest. Unfortunately, it died about a week later. Further bad luck has been with the Plum-heads. Since I last wrote, in mildly optimistic mood, I have lost the last year's young bird (hatched May, 1955). It was as fat as could be and a very careful P.M. in my lab. showed absolutely nothing. I need hardly say that it was a female: the ovaries were becoming active. It had developed a grey-green head in the first autumn (1955) moult and a dark-grey head in the autumn (1956) moult. I had always believed it to be a hen by the look of its head. As if this wasn't enough—this year's young bird (a lovely one when it emerged) has gone wrong and is now in the house on a diet of vitamins. I am going to bring a pair into a warm room this spring, and to h—— with all the experts. Plum-heads are like Kendall: they like it warm."

* * *

REVIEWS

THE WATERFOWL OF THE WORLD. Volume II. By JEAN DELACOUR, with illustrations by PETER SCOTT. Published by Country Life, London, 1956. Price £6 6s. net.

This is the second volume of the three projected, which will cover the waterfowl, swans, geese, and ducks of the world. This comprehensive work on a group of birds which have a very wide interest both to general ornithologists and to the more specialized aviculturist, is the result of a happy combination of two experts of world renown on their subject—Jean Delacour and Peter Scott.

As stated in the introduction to the volume under review, the first volume (reviewed in the Jan.–Feb. number 1955 of the AVICULTURAL MAGAZINE) dealt with the more terrestrial members of the family Anatidae. The second volume is confined to one tribe, the Dabbling, Surface-feeding, or River Ducks, which include thirty-eight species of the genus *Anas*, together with five aberrant genera each consisting of one species, which are tentatively placed with *Anas* as their position in the general system of genera and species of Anatinae are still not clearly understood. These are the Pink-headed Duck of India (*Rhodonessa*), Australian Pink-eared Duck (*Malacorhynchus*), the Blue Duck of New Zealand (*Hymenolaimus*), the South American Torrent Ducks (*Merganetta*), and the Freckled Duck (*Stictonetta*) of parts of Australia and Tasmania.

The number of colour plates has been increased from sixteen to twenty-four in order that every member of the tribe and its duckling may be shown in colour. There are twenty-nine distribution maps and a full systematic list, and indices of scientific and English names. This is a worthy successor of the first volume and everyone interested in waterfowl will wish to possess it.

P. B-S.

ZOOLOGICAL PHOTOGRAPHY IN PRACTICE. A contribution to the technique and Art of Wild Animal Portraiture. By HUGH B. COTT. Illustrated. Published by the Fountain Press, London 1956. Price £2 12s. 6d.

This is the first book to be devoted to a subject which has become of great importance as an aid to scientific research, and also now attracts an increasing number of animal photographers. Birds have always remained favourite subjects and aviculturists who wish to make photographic records of the inmates of their aviaries will find the information crowded into these pages invaluable. The first chapter is devoted to the choice and characteristics of cameras and for serious bird photography the decided preference is for the larger, heavier, and more old-fashioned type. The author then deals with various technical aspects—apparatus and accessories, focussing, exposure, negatives, development, and other details; and the reader is given detailed information, often in tabular form, of the advantages and disadvantages of various equipments and methods. The artistic approach to zoological photography raises a topic on which the author is an authority as he is a rare combination of zoologist, naturalist, artist, and skilled photographer. An elementary knowledge of the principles of picture design and especially the importance of tone will help the photographer to obtain a pleasing and effective picture which impresses the subject on the mind much more effectively than a poor one. But for the full use of a good photograph, a negative of good quality, critical sharpness, and sufficient size is absolutely essential.

The chapter devoted to the scientific approach to zoological photography stresses the value of the camera in recording zoological information, though this by no means excludes the artistic approach. The innate responses and social behaviour of birds, for example, can be recorded much better by the camera than by lengthy descriptions. The use of infra-red photographs opens an entirely new and little explored world to the naturalist, especially in the field of camouflage, and has made possible the photography of animals in complete darkness.

The author has travelled extensively and draws from personal experience in giving advice on the photography of animals under widely different conditions such as tropical rain forests, desert, and savannah. The latter part of the book consists of a series of plates reproducing 68 of the author's photographs of zoological subjects, illustrating various topics discussed in the text; but although very good examples of the photographer's skill they hardly do justice to the originals. The book can be thoroughly recommended to all those interested in a fascinating hobby of great scientific value.

E. H.

FUNCTIONAL ANATOMY OF BIRDS. By ALASTAIR N. WORDEN.
Illustrated. Published by *Cage Birds*, London, 1956. Price 9s. 6d.

This book is based on a series of articles that appeared in *Cage Birds*. The author, a well-known veterinarian and biochemist who was formerly Milford Research Professor in the University of Wales, describes in simple language, accompanied by a series of clear diagrams, the essential features of the anatomy and development of birds. This information is essential for a clear understanding of the real workings of the bird's body in health and disease. The first chapter deals with the general framework of the body—the skeleton and joints—and is followed by an account of the surface anatomy. Successive chapters are concerned with the leg, wing, digestive system, excretory system, reproductive system, respiratory system, blood system, ductless glands, nervous system including ear and eye, and the organs of voice production. Finally there is a chapter on the development of the chick before hatching.

Aviculturists will find the general principles described in this book of great help in a further understanding of the many problems associated with the health, behaviour, general activities, and feeding of birds in captivity. It is a useful addition to avicultural literature.

E. H.

PARROTS, COCKATOOS and MACAWS. By EDWARD J. BOOSEY.
Published by the Rockcliff Press Publishing Corporation.
London, 1956. Price 21s. net.

The appearance of a book dealing with parrots, cockatoos, and macaws by such a well-known aviculturist will be welcomed by all those interested in these most popular birds. While still a schoolboy Mr. Boosey bred budgerigars and Red-Rump Parrakeets and he has five times been awarded the Avicultural Society's medal for a first breeding in captivity of various species including the African Grey, the Blue-fronted Amazon, and the Varied Lorikeet. He speaks with authority, therefore, in the chapters dealing with the feeding, care and breeding, and common parrot illnesses and how to deal with them. There is also an interesting chapter on parrot-keeping in the past, including mention of a Grey Parrot belonging to Henry VIII, and another which was the favourite of the Duchess of Lennox and Richmond, a mistress of King Charles II. The stuffed body of this parrot is supposed to be the oldest stuffed bird in the world and is preserved in Westminster Abbey.

There are brief descriptions of each species and useful notes on the characteristics of the more common ones, many of which have been kept by the author. It is rather unfortunate, however, that more care

has not been given to the nomenclature of the group, for numerous errors have crept into the text—*Kakatôe* for *Kakatoë*; *Pæocephalus* for *Poicephalus*; *Loppochroa* for *Lophochroa*; *Caliptorhynctus* for *Caliptorhynchus*. I mention only a few of the more obvious mistakes. Also the term *Chrysotis* is retained although this has long been merged in the genus *Amazona*.

The excellent bird photographs illustrating the text were specially taken by the author's partner, Alec Brooksbank, and add considerably to the interest of the book.

E. H.

* * *

NOTES

RARE BIRD RECORDS AND "ESCAPES"

The number of birds which have been added to the British List has greatly increased during recent years, no doubt in no small part due to the widespread interest in bird watching and the large number of bird-watchers there are all over the country. In the case of some species, however, there is always a doubt as to whether these are genuine wild birds or escapes from zoos or private owners. With waterfowl this is particularly the case and for this reason the Avicultural Society instituted its ringing scheme for waterfowl, the rings issued being a light blue in order that they should be as visible as possible in the field; an additional advantage in the use of these rings is the possibility of restoring the "lost" birds to their owners.

The Editors of *British Birds* in which records of rare birds are published are always anxious to establish without doubt that the records are of truly wild specimens and to this end the aid of aviculturists is earnestly sought. If anyone has lost a bird which might be taken for a visitor to this country it would be of great assistance if he would report this to the Hon. Secretary of the Society or to the Editor of the AVICULTURAL MAGAZINE.

The most recent "record" confronting the Editors of *British Birds* at present, is a Flamingo seen at Bartley Reservoir, near Birmingham, on 2nd December, 1939. Inquiries from likely zoos have elicited that no bird has been lost from these collections. It seems more than likely that this bird is an escape. Can readers of the AVICULTURAL MAGAZINE help to solve this problem?

ED

The Editor takes no responsibility for opinions expressed in articles or correspondence.

CANDIDATES FOR ELECTION

- A. AINSWORTH, 19 Eign Road, Hereford. Proposed by P. A. Birch.
- BAYNTUN, 52 Woodbourne Avenue, Streatham, S.W. 16. Proposed by Miss K. Bonner.
- W. BEECROFT, 257 Grandstand Road, Hereford. Proposed by P. A. Birch.
- BOOTH, 15 Brookside Crescent, Middleton Junction, Nr. Manchester. Proposed by Miss K. Bonner.
- R. BOWMAN, 266 Yardley Wood Road, Birmingham 13. Proposed by P. A. Birch.
- E. BRYCE, 1309 Eighth Avenue, Safford, Arizona, U.S.A. Proposed by A. A. Prestwich.
- E. W. CHATT, "Glendene," Surig Road, Canvey Island, Essex. Proposed by P. A. Lindsay.
- DOUGLAS A. CHRISTENSEN, Kendrick, Idaho, U.S.A. Proposed by George W. Noreen.
- F. CLARKE, Glebe House, Weston-under-Wetherley, nr. Leamington Spa, Warwicks. Proposed by Terry Jones.
- Col. H. W. CLAYDEN, Woodlands, Wyre Forest, nr. Kidderminster. Proposed by Major C. N. Clayden.
- COBB, 59 Windmill Street, Whittlesey, nr. Peterborough, Northants. Proposed by Miss K. Bonner.
- R. DAVIDSON, 71 College Bounds, Fraserburgh, Aberdeenshire. Proposed by Miss K. Bonner.
- GEORGE A. DOUGLAS, 84 Stamford Street, North Rockhampton, Queensland, Australia. Proposed by Miss K. Bonner.
- M. DUN, Craigellachie, Galashiels. Proposed by Miss K. Bonner.
- J. FRASER, Chief Warden of Fauna, Fisheries Dept., 108 Adelaide Terrace, Perth, Western Australia. Proposed by Miss K. Bonner.
- G. GAMMAGE, 5 Glenavon Road, Ipswich, Suffolk. Proposed by A. A. Prestwich.
- NEST W. GREEN, 39 Bowen Street, Levin, New Zealand. Proposed by Miss K. Bonner.
- rs. B. M. GWYNNE-EVANS, 6 Eldon Road, London, W. 8. Proposed by A. A. Prestwich.
- J. JAMES M. HARRISON, D.S.C., M.R.C.S., L.R.C.P., F.Z.S., M.B.O.U., Bowerwood House, St. Botolph's Road, Sevenoaks, Kent. Proposed by Miss P. Barclay-Smith.
- P. HEAYSMAN, Heathfield, South Australia. Proposed by Miss K. Bonner.
- ODNEY HENDERSON, Barmera, South Australia. Proposed by Miss K. Bonner.
- HENLEY, Riverhead Farm, Market Weighton, York. Proposed by A. A. Prestwich.
- E. HYLAND, P.O. Box 5, Ficksburg, O.F.S., South Africa. Proposed by W. B. Frostick.
- rs. M. T. KUFFALL, 2 The Drive, Mardley Hill, Welwyn, Herts. Proposed by A. A. Prestwich.
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- G. THOMAS, 188 Walsall Road, Bridgtown, nr. Cannock, Staffs. Proposed by Miss K. Bonner.
- H. VOS, Oostsingel 51, Delft, Holland. Proposed by A. A. Prestwich.
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- A. WALKER, Inchcross Farm, Bathgate, West Lothian, Scotland. Proposed by A. A. Prestwich.
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by A. A. Prestwich.
GRAHAM WOOD, "Windrush," Hall Lane, Mobberley, Cheshire. Proposed by
W. B. Frostick.
W. WORTON, 26 Wood Street, Woodside, Dudley, Worcs. Proposed by Miss K
Bonner.

NEW MEMBERS

The twenty-six Candidates for Election in the November-December, 1956, number
of the AVICULTURAL MAGAZINE were duly elected members of the Society.

READMITTED

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VISIT TO CHESTER ZOO

The Council of the North of England Zoological Society, through the Director-Secretary, Mr. G. S. Mottershead, kindly invite members of the Avicultural Society to lunch at the Zoological Gardens, Chester, on Tuesday, 25th June, 1957.

Fuller particulars will be given in the next number of the Magazine.



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AVICULTURAL MAGAZINE



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1957

THE AVICULTURAL SOCIETY

Founded 1894

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Membership Subscription is £1 per annum, due on 1st January each year, and payable in advance. Life Membership £15. Subscriptions, Changes of Address, Names of Candidates for Membership, etc., should be sent to the Hon. Secretary.

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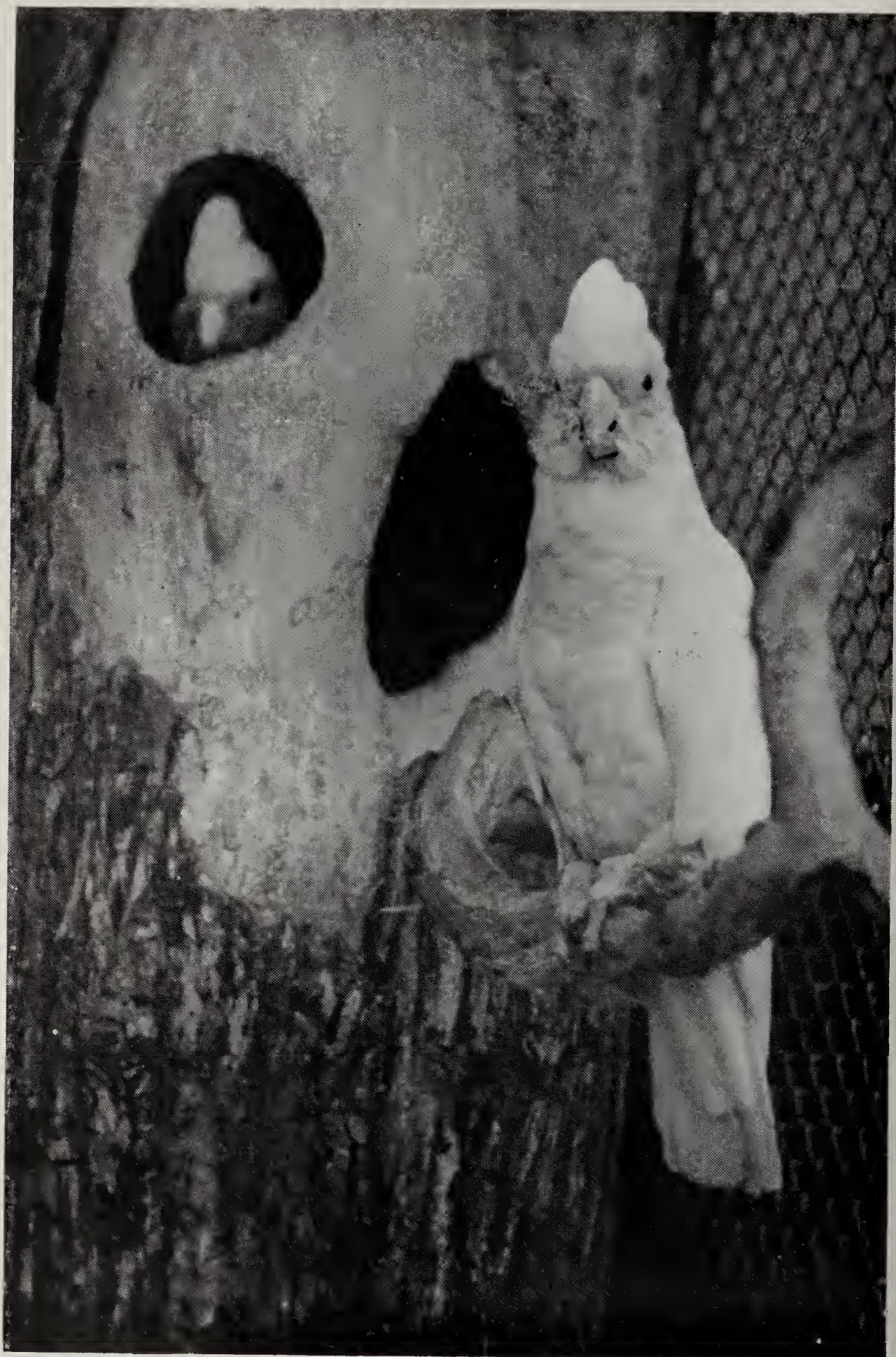
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THE AVICULTURAL MAGAZINE

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**The Editor : Miss Phyllis Barclay-Smith, 51 Warwick Avenue, London,
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ROSEATE (LEFT) AND BARE-EYED COCKATOO AT THE ENTRANCE TO
THEIR NESTING TRUNK.

Frontispiece

AVICULTURAL MAGAZINE

THE JOURNAL OF THE AVICULTURAL SOCIETY
AND THE AVICULTURAL SOCIETY OF AMERICA

Vol. 63.—No. 2.—*All rights reserved.*

MARCH-APRIL, 1957

ROSEATE × BARE-EYED COCKATOO HYBRID

By KAROL ŁUKASZEWICZ (Director of the Zoo, Wrocław, Poland)

The female Bare-eyed Cockatoo possessed by the Wrocław Zoo was quite an old bird when, in 1948, it returned from a temporary post-war exile to our bird house. Its very clamorous call, uttered especially frequently in the evening hours, and heard far away in the park, made me suspect that it was a female. For a time it shared the same aviary and company of a Greater Sulphur-crested Cockatoo, then lived with many other parrots, but was much dreaded by them because of its pugnacious character. Finally, it associated itself with a Red Macaw until, in 1953, the Zoo came into possession of a Roseate Cockatoo, whose most outstanding quality consisted in a remarkable repertoire " of some fifty Polish words.

The two cockatoos became excellent friends from the very moment they saw each other and as the Bare-eyed at the same time stopped giving its evening concerts of cries, I thought it proper to give this somewhat unusual couple an opportunity to nest. A trunk of an old elm tree, 5 feet high with a diameter of some 12 inches, was placed in one corner of the aviary. A circular hole measuring 4 inches was made in the front of the bark-covered trunk and below this an oblong fissure invited the birds to work it with their beaks so as to enlarge the shallow cavity inside the trunk. Both cockatoos took great interest in working at the trunk. Day after day the Roseate male left the hole of the ground near the trunk covered with chips and splinters, he worked so hard. Gradually the hole inside the trunk became larger and larger and the birds managed to transform the narrow fissure into a wide entrance to their nest situated a little below the original circular opening.

By the beginning of 1955 it was evident that the friendship of the two cockatoos was of the most serious nature. The best proof of it was an egg laid on the last day of March. The Roseate male and the Bare-eyed female were sitting and incubating most assiduously on

their nest and in the intervals did not stop working at the trunk. After twenty-one days of incubation the keeper found, on the morning of 18th May, that a young bird had hatched and was lying dead on the sand on the ground of the aviary. A conspicuous feature of the young was a well-developed bare area around the eyes.

Six months later, in December, 1955, the cockatoos mated again several times during a week. Eggs, two in number, pure white and the size of a larger pigeon egg, were laid on 6th and 8th January. Incubation began once, the male relieving the female every three hours by day and night, and lasted for thirty-two days. The young ones hatched on 8th February and lived for twelve days. Their rate of growth showed itself to be very good. At the time of death they were covered with conspicuous quills. The explanation of this mishap is not easy. Obviously the parents fed the young birds well and we found no reason to interfere by taking them out of the nest. The birds were absolutely unmolested and the keeper did not even dare to enter the cage because of the aggressiveness of both adult birds.

The post-mortem examination of the two young ones, which were normally developed and weighed respectively 88.5 gr. and 118.0 gr. did not reveal any pathological changes. The stomach and the intestines, however, were copiously filled with sand, which was probably brought with the food. The floor of the aviary was therefore scrupulously cleared of sand and only a small box containing some gravel was left in the aviary for the parents.

Almost immediately after the death of the young ones the parents mated again and eggs were laid on 10th, 12th, and 17th March. The laying of the last egg was somewhat belated and for three days the female (the Bare-eyed) was evidently feeling sick; it could not keep perched normally across the branches but laid along them with its eyes shut and shivering, often with cowered wings—a typical picture of what in German is called the *Legenot*. Two eggs disappeared in an unaccountable way leaving no trace. Finally, on 5th April, 1956, a young one hatched and was reared successfully up to the age of twenty-one days, when suddenly the parents stopped feeding it. This was noticed too late and the young one died from under-nourishment.

On 21st and 25th May, 1956, again three eggs were laid. The incubation was regular and lasted from twenty-five to thirty days. The first young cockatoo hatched on 15th May and from the beginning was obviously a stronger bird. The two others did not thrive and died a few days after hatching, on 18th and 20th May. The survivor was left with the parents for ten days, during which it was regularly fed by them. On 26th May, however, as the parents were observed to be neglecting their duties, the old cockatoos were moved to an aviary some distance away and the young hybrid confided to the care of a keeper, Mrs. Teresa Ungert.



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To face p. 42 THE THIRD HYBRID. 19.IV.56.



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THE LAST HYBRID, JULY, 1956.



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Mrs. Teresa Ungert, feeding the last cockatoo hybrid, July, 1956.
To face p. 43

The bird was fed by the keeper from her mouth every two hours between 7.30 a.m. and 6.30 p.m. For the first three days it was given pap of hard-boiled yolk and toast in this way ; then chopped and crushed sunflower seed and fresh strawberry juice were added. Gradually this diet was amplified by cake, pulped mashed apple, boiled rice with strawberry juice, pumpkin seed, lemon and red currant juice, fresh cherries, and tomatoes.

The young cockatoo grew fast and fledged normally, the quills appearing first on the wings and the crest after the eighth day. After a month the feathers developed to such an extent as to show the colours. The general colouring was that of the father : dove-grey above, dirty rosy-yellow on cheeks and underparts, with pure white primaries. The bare area round the eye, characteristic of the mother (*C. gymnopsis*), was well developed but instead of the blue tinge of *C. gymnopsis* it was a pronounced yellow colour. From the age of four weeks the young hybrid began to utter peeping sounds, when six weeks old it began to preen its plumage. Unfortunately, on 13th August, after a short period of sickness the young cockatoo died of pneumonia, probably contracted during a stay of a few minutes outside the house, when having its photograph taken.

The experiment of artificially rearing a cockatoo hybrid, despite the final negative result, has thus proved successful. The hybrid lived fifty-nine days and it is probable that, in spite of an undoubtedly delicate constitution it might have been brought to complete maturity. The anatomical examination, however, showed that the skeleton of the young bird was rather weak, and therefore in future attempts greater attention must be paid to the supply of mineral components.

The interbreeding of *C. roseicapilla* and *C. gymnopsis* seems to indicate that the two species are more closely related to each other than has been assumed in the past.

THE BREEDING OF THE LITTLE OWL

(Athene noctua)

By C. AF ENEHJELM (Helsingfors, Finland)

In 1951 I got two specimens of the Little Owl from Germany. The birds were exactly similar in size so I had no idea as to the sex. In winter they were kept in a well-lighted indoor aviary about 10 × 4 feet and 8 feet high. They spent the summer in a compartment in our cages for small birds of prey. This compartment is 20 × 5 feet and 8 feet high with an adjoining open-fronted shelter 5 × 5 feet. The upper part is boarded about 3 feet downwards from the roof, giving the birds an undisturbed and well protected shelter. In the climate of Finland we are simply forced to take most birds—even our native ones—inside for the winter, among other reasons, in order to prevent the soft food and meat from freezing as hard as a stone. The keeping of birds and mammals in a climate like our's presents problems unknown to avicultural and zoological colleagues living in milder latitudes. We cannot release the birds into the outdoor aviaries too early in the spring, as experience has shown that, even if kept in only slightly warmed rooms, the birds are rather delicate if put outside in the early spring, even though the same specimens may stand quite low temperatures in late autumn without any ill effects.

In 1952 and 1953 the Little Owls made no attempt to nest, but early in April, 1954, two white eggs were laid on the floor of the flight. On 2nd April, 1955, an egg was found on the floor of the flight. Without very high hopes I constructed a nest of brick on the floor of the flight and covered it with a piece of plywood kept in position with a brick. Inside I made a nest of some hay and put the newly-laid egg in the nest. Contrary to my expectations the nest was accepted and four more eggs laid in it. As far as I could see incubation started about 8th April. On 6th May I observed some egg-shells in front of the nest and on removing the plywood cover saw some white, downy youngsters under the female. I was not able to find out whether all the eggs had hatched as I did not want to disturb the birds unnecessarily. Observation of the birds was not easy as one of the parents, obviously the female, immediately disappeared into the nest when the room was entered. The old birds were not shy in a hysterical way, but were always on the watch for every movement; they had obviously been caught when full grown. When I looked into the nest a fortnight later I saw that all the eggs had hatched and the youngsters were obviously thriving well. As far as I could see they were all the same size and I am under the impression that incubation had started as soon as the eggs were laid or possibly at least most of them. On 6th June I saw three youngsters popping round on the floor when I entered the room, but they all immediately disappeared into the nest. I entered the flight and

removed the cover of the nest and all five youngsters came out and went running round the aviary, trying to fly without success. About a week later, however, they were all sitting on their perches, 6–7 feet high, but for several days they rushed down to the nest whenever the room was entered. After yet another week they remained on their perches or flew from perch to perch and I removed the nest. The family was then moved to the outside flight, the young having first been ringed with aluminium parrakeet rings. They are all thriving very well. When they left the nest the young were similar in colour to their parents and are now quite indistinguishable, so I am glad I ringed them in good time.

As to food, the owls have mainly been fed on white mice, rats, and golden hamsters, very occasionally also with chickens, crows (the two last named being cut into suitable pieces), and Budgerigar runners. 'Fresh ants' eggs were scattered over the food. We breed a lot of hamsters as food for our small owls and birds of prey and they obviously seem to prefer them to other rodents. In my experience Little Owls are considerably easier to keep than many other small species, for instance, Tengmalm's and Passerine Owls. With exactly the same treatment the Tengmalm's Owls are difficult to maintain for any length of time. They seem to thrive quite well for some time but suddenly sit on the ground and are usually dead within a day or two.

I have never seen the Little Owls bathing, even if suitable facilities (at least in my opinion) are always at their disposal. But they seem to enjoy sitting outside in the rain and getting their feathers wet.

As a summary : it seems that the eggs are laid at intervals of one day and that incubation starts when the last or second last egg is laid. Incubation obviously lasts about four weeks. The youngsters leave the nest (in captivity, at least) when about a month old and can fly quite well a week later. After the nestling down there does not seem to be any intermediate colour in their first plumage, but the young immediately attain the colour of the old birds, a fact I have also observed when breeding Eagle-Owls.

I regret that my observations are not more exact, but as this is the first time I have bred this species I would not take any risks as I was anxious to get a complete success with the birds.

Additional note.—In the winter 1955–56 I unfortunately lost the old hen and one youngster and no attempts to breed were made by the remaining five birds in the spring of 1956.

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ADVENTURES WITH SOFTBILLS

By J. R. VAN OOSTEN (San Marino, California, U.S.A.)

My adventures with birds started when I was born, but it took me until my fifteenth birthday to realize that fact. My father had always kept a large cage of African finches in the house and these always used to fascinate me. In 1941 we moved to California and, once settled here, he built an aviary which housed common finches and parrakeets. Right after the war years we built another aviary, smaller, which would enable us to house our finches separately. Then in 1948 I came across a copy of *Aviculture* and with that my adventures really began. In the issue was an article written by Mr. A. H. Isenberg on the breeding of some Alcippes. I promptly wrote him regarding softbills and where it might be possible to obtain some. His answer put me in contact with another grand gentleman, Mr. Ray Thomas, whom I met and had a chance first-hand to see my first softbills. Through both these men I learned how to keep and take care of these beautiful gems. I owe a great deal to them, for had it not been for their advice and assistance I might never have become interested in birds.

In the early months of 1949, while driving back to Los Angeles, I stopped at a pet shop and purchased my first pair of softbills for the sum of 25 dollars—a pair of White-cheeked Bulbuls. Since that time one might say that I have become a “bird-nut”, for my love for birds grows more with each passing day and at present being only twenty-two I can look forward to many enjoyable years with birds.

Besides the two above aviaries we now have three large ones for the various size softbills—large, medium, and small. The large-size aviary houses Toucans, Magpies, Jays, etc., and is planted with various bushes and small trees and includes an orange tree. It is 18 feet long, 15 feet wide, and 12 feet high with an added shelter on the outside, enclosed except for two windows and the front. The aviary for medium-sized softbills is 36 feet long, 15 feet wide, and 10 feet high with an adjoining shelter 21 feet long, 9 feet wide, and 7 feet high. The shelter is divided into two parts so that food may be placed in two separate places in order to eliminate fights. This aviary contains Jay-Thrushes, Jays, Thrushes, Barbets, Sibias, Starlings, Troupials, etc., and is likewise planted with bushes, small trees, and one orange tree. The last one is our “glass house” aviary for the small birds such as Tanagers, Sugar Birds, Redstarts, Bulbuls, etc. The house is 24 feet long, 12 feet wide, and 8 feet high with an adjoining flight 15 feet long, 12 feet wide, and 9 feet high. Both the house and the flight are planted with small bushes, vines, grasses, and a few small trees. Also in this aviary we built a two-tiered running waterfall which the birds seem to enjoy greatly as it draws many insects and bacteria. All the perches and swings in the three aviaries are dead

ree branches, which I feel helps to simulate natural surroundings as well as making the aviary look more artistic.

To-day one does not read very much about softbills so I decided to write an article for the Magazine, giving some of my experiences with the birds in my collection. It is further hoped that this may spur on other collectors of softbills to write on their birds as they may have witnessed things which would be of interest to other enthusiasts.

The most outstanding event in my collection thus far was my fortunate success in raising two hybrid Mynahs this year. Housed in the "glass house" were a beautiful pair of Grey-headed Mynahs which have been here for three years. While away at college the hen was lost and the cause of death not determined. In the same enclosure were also two pairs and an extra hen Pagoda Mynah which have been here for six years. Early this year the male Grey-headed chose the odd female Pagoda as his mate. I had hopes that the two might breed and sure enough they did two months later. As both these birds are well known to aviculture I see no reason for going into details of their respective descriptions. It might be worth mentioning, however, that the females of both species are easy to sex. I have found that the females are all a shade lighter than the males, and this is especially noticeable if the birds are in the sun or upon close inspection of three or more birds.

The pair settled down and by April had chosen a redwood stained barrakeet nest-box as their nesting site. The only materials used in building were twigs and a few feathers. The material was slanted from the opening down to the back with the eggs being laid in one corner. As I was unable to be home all the time no accurate record was kept. However, four eggs were laid and four young hatched by the middle of June. One youngster disappeared after four days and I suspect that the male Scarlet Cock-of-the-Rock was responsible. Soon after, four days later, another baby was found dead in the nest. The two remaining are now fully feathered and not dependent upon their parents.

The youngsters were fed my formula egg-food mixture, soaked currants, all sorts of fruit—apple, grapes, tomato, pear, banana—milk sop, canned dog food, and Mockingbird food. The only live food which was used was live fruit-flies which I propagate within the aviary by filling half-way a 5-lb. lard can with fruit rinds. I find that there is no odour and hundreds of live flies, which all the birds love, are produced.

Both youngsters show very little colour beyond grey. The wings, back, rump, and tail are a deep powder grey. Head, neck, chest, belly, and vent are a very light powder grey, in which they resemble their father. The bill, feet, and eyes are also the same as their father's. There seem to be some black feathers coming on the crest of the

head, as in the Pagoda, but only the next moult will show for sure. Beyond this they show none of the colour or other characteristics of their mother. Their size is between the two, but this may change when they reach maturity. Needless to say, sexing is not yet possible although one seems a little brighter than the other. They have at present all the antics of their father as they are always chirruping and running around in a never-ending search for bugs. I will write further on these two birds after they pass their first moult.

Another unique nesting took place in the "glass house" by a pair of Pope Cardinals which each year for the last four years have maintained two nests at the same time. Both birds have been seen entering the nests and at times neither one was seen, and upon my entering the "glass house" each would come out of a nest. They nested twice each year, during the spring and summer, and as yet have never reared a young one. This is due to the lack of mealworms, which are only fed during the winter months. They have never been observed catching or eating fruit-flies so this no doubt is where the trouble comes in. Unfortunately, I am not home so am unable to feed the live food required; however, I feel that both broods could be reared if the live food were supplied. There are always four eggs in each nest and four youngsters hatch.

About two years ago my male White-cheeked Bulbul died of old age. The pair had been very devoted to each other, but as soon as the male was gone the hen promptly killed my female White-eared Bulbul and mated with the male. They had one nest each year, but the youngsters just vanished into thin air. They built the nests in a canary-type outside cage-nest. The nest was covered with palm leaves on the sides and the top, leaving the front open. The nests were constructed of dried grasses, twigs, and feathers, and lined with string and cotton. Two eggs were always laid and the hen sat close at all times; she was fed by the male. This year no nest was built as the hen is rather old and cannot fly very well although she is in perfect condition. The White-eared male is a most devoted husband and sits with her most of the day and preens her feathers. He also hawks fruit-flies which he feeds her, as he seems to know that she is unable to fly very well.

In the summer of 1954 while sitting in the aviary taking notes, all of a sudden I found the cause of the disappearing Bulbul youngsters. Hovering outside the nest like a Humming Bird the Scarlet Cock-of-the-Rock reached in with his beak and took one of the young. He then flew to a perch where he struck it a few times and then swallowed it whole. Needless to say, the babies were not more than a few days old. Had I not seen it then and again on other occasions I would never have believed it. The guilty party was believed to be a male Orange-headed Ground Thrush. Because of lack of space I was unable

to remove the bird and was therefore unable to raise any young. These young could have proved to be a very interesting hybrid but unfortunately I shall never know.

Also within this aviary are housed a pair of Button Quail, and after two nests, young all reared, the babies began to disappear. I feel certain that the same bird is responsible; however, he never bothers the White-eyes or Yuhinas which sleep near him at night. Mrs. Erlanger some years ago had babies from Cocks-of-the-Rock and she fed them baby mice. It is very possible that breeding these lovely birds might be achieved by feeding some of the larger live food, such as baby mice and rats.

Another attempted nesting took place this summer but met with failure. The pair consisted of a male Orange-headed Ground Thrush and a female White-throated Ground Thrush, both birds had been imported from India in 1950. Up till two years ago I only suspected the sex, but I could not be sure. The female Orange-headed had to be placed in the medium-sized softbill aviary for fear that the male would kill her. However, the White-throated was left in as he took no notice of her. The male was much deeper in colour than the female and was heard singing on a few occasions. This year there was no doubt that they were a pair as one egg was laid and sat on for five days before it was broken. During this time the male was never more than 5 feet away from the nest and any bird coming too close was at once chased off. I have found these birds to be very nervous and no doubt this caused the failure because if anyone came to the aviary the female would leave the nest. The nest was built 4 feet off the ground in the right-hand front corner of the aviary in a small, but thick, spruce tree. The tree was right behind the waterfall and could not be seen from outside the aviary even though the nest was 2 feet from the wire. The nest itself reminded one strongly of a dove's nest, although it had a sort of a mud plaster holding the bottom together. Upon closer inspection I noticed that twigs had been laid between two branches, then some twigs placed in the opposite direction and covered with mud. The nest was roughly lined with grass and a few leaves. No further attempt was made by these birds, although both were seen carrying twigs on several occasions.

I have found that both these birds are very friendly towards other birds. At present there is an English Robin in with them and they take no notice of him. Also a pair of White-capped Redstarts had been kept in the same cage and not once had the Ground Thrushes been seen chasing them or even paying them any heed. This also holds true for a female Rainbow Bunting that always seems to get the fruit-fly just at the moment the Orange-headed is reaching for it. Also at one time a Shama Thrush had been in the same aviary with the same good results. One day by accident my father turned loose

a male Kashmir Blue Thrush and the Ground Thrushes wasted no time in trying to get a hold of him and do him in. He was taken out before any harm could come of it.

Next number I will relate an almost successful attempt by a pair of Black-chinned Yuhinas to rear some young, and of some of the other birds which are housed in my collection. I will tell how my birds have been fed, which I feel has attributed to some of my very good fortune. And last I will give descriptions of some birds which have been imported from South America but about which I can find no mention in books or the back issues of this Magazine.

(To be continued)

* * *

BREEDING LOVEBIRDS IN CALIFORNIA

By KENNETH A. WYATT (Torrance, California, U.S.A.)

Having read in your Magazine of the difficulty in raising lovebirds in England, I would like to write about the very good luck I have had in breeding them. In December, 1955, I finished an aviary 20 feet long, 10 feet high, and 8 feet wide. By March, 1956, I had acquired four pairs of Peach-faced, two pairs of Masked, and three pairs of Fischer's and put them all into this one big aviary. With plenty of nest-boxes I had very little, if any, fighting, and have not bred a hybrid in the aviary. On 1st September, 1956, I took the boxes down for a three-month rest, and at that date had reared forty-one lovebirds, twenty-four Peach-faced, four blue Masked, seven Masked, and six Fischer's.

I got a little impatient and put the nest-boxes in early, and to-day (6th January, 1957) I have seven baby Fischer's flying along with two blue Masked the Fischer's reared with their own. In the nest I have three Masked, three blue Masked, and two Peach-faced two weeks old. Also two nests of Peach-faced, five eggs in each box, all fertile, due to hatch any day, also one other pair of blue Masked due to hatch in about a week. The only trouble I have had is when the young come out of the nest the Peach-faced like to bite the youngsters' feet causing them much trouble but not injuring them.

The winter here in southern California has been very mild, many days being in the 80's and nights in the 50's, with only about two rainy days in December and January so far. In this wonderful climate the raising of these lovebirds is not rare or out of the ordinary, for many of my friends have done as well and some better, and I take none of the credit. The birds just love it here and will fill one

viary if one just gives them a little care. Other than millet and sunflower seed I give them soaked bread, pyracantha berries, corn on the cob, apple, grass seeds of all kinds, and lots of lettuce and dandelion.

* * *

BREEDING HYBRID BROWN'S × YELLOW ROSELLAS IN CALIFORNIA

By DAVID M. WEST (Montebello, Calif., U.S.A.)

Last year one of the more interesting breeding successes was the rearing of four young hybrid Brown's × Yellow Rosella (*P. flaveolus*). Last fall I finally despaired of obtaining proper mates for the male Brown's and the female Yellow Rosella, so it was decided to put the two birds together and attempt to produce some hybrids. From the very first minute of introduction the two birds agreed, despite the difference in size between the smaller Brown's Rosella and the larger male Yellow Rosella. Formerly, when paired to a female Brown's, the cock was quite given to driving his mate about, but he did not continue this practice with the Yellow Rosella hen. Apparently her greater size impressed him, and he made his advances to her with the greatest of care.

During March the pair were frequently seen feeding and the cock Brown's displayed to his mate almost every morning. Two large nest-boxes were put up about the middle of March and the pair were often seen visiting the boxes after this. By April it was apparent that the hen was most seriously interested in the smaller of the two boxes, and much of the sawdust and wood chips were being ejected by her. In late April the pair were observed mating, and shortly after that the hen disappeared into the box.

No investigation was made during incubation; as the hen would always tumble back into the box upon seeing anyone approaching. The first opportunity to investigate the contents of the nest-box was on 16th May, when the temperature was well over 100 degrees and the hen was off the box. The nest was observed to contain four nice youngsters that were probably just five or six days old, and very closely intertwined.

During the period the young were in the box both parents fed them, and the male was frequently observed to enter the box to do his fair share. The usual grains, fruit, and extras in the form of greens were given and both parents spent large amounts of time caring for the growing family.

The first two youngsters left the nest when about five weeks old.

They were excellent fliers and very steady. The second two youngsters left the nest two days later, and they too were steady and quite tame. Before the second two left the nest the mother had laid again, and is now incubating.

As this cross has not, apparently, been achieved before, a short description of the youngsters may be of interest. They are best described as almost completely resembling their mother—being quite identical in coloration with her save for the fact that they have pale orange under tail-coverts where the true Yellow Rosella has pale yellow under tail-coverts. There are also a few pale orange feathers on their breasts—but otherwise they are closely akin to young Yellow Rosellas. This similarity to the mother is rather surprising, for I had rather thought that they would resemble a combination of the two parents which are quite different from each other. Still, crosses between the widely different Pennant's \times Barnard's result in young that are so nearly pure Barnard's in appearance that only an expert would be able to tell the difference.

Eventually I anticipate breeding the young male hybrids back to their Yellow Rosella mother, and see if the resultant young are not good enough to try and re-establish the Yellow Rosella in my collection for new imports are out of the question, and the Yellow Rosella is very scarce in the U.S.A.

* * *

THE STORY OF A BLUE CROSSOPTILON

By SYDNEY PORTER (Derby, England)

“ Emma ” should not have been at all ! “ He ” and his sister were a kind of baksheesh, as my own life has become after being saved by the drug “ Cortisone ”. Towards the end of a very long illness, my kind friend Fred Logan (who came to my rescue when the person who was looking after my collection suddenly disappeared, with the result of the loss of nearly half the birds) set a quantity of pheasant eggs. These all duly hatched, were reared, and most of them given to friends. However, there were five eggs left over, we did not know of what species they were or how old. Mr. Logan went to a good deal of trouble, as it was then late in the season to get a broody bantam. At that time I was well enough to do a few chores connected with the birds and one was to see after the bantam hen.

The chicks from the first lot of eggs were now quite large. From their earliest chickenhood, with the aid of the gardener, we moved their pens to fresh ground every day . . . but, Oh ! . . . the damage the young Crossoptilons did to my nice smooth lawns ! In fact they have not recovered yet.

Crossoptilons, being mainly root feeders, dig for their living, and now those chicks dug! At the end of each day there were dozens of holes in the sward into each of which one could put a tennis ball.

Every evening the bantam was taken off the eggs, but she was in such a state of broodiness that she used to rush back on to them as soon as she was lifted off. To stop this the grille in front of the coop was placed back until she had finished feeding.

One day the housekeeper came to say that there was a long-distance call on the telephone. Now the aviaries are at the bottom end of a small orchard and quite a distance from the house. By the time I had heard most of the "birdy" gossip from London the hen and the eggs had been clean forgotten. Next day, about 6 p.m., the hen was seen sitting disconsolately before the grille and the eggs stone cold after twenty-four hours' exposure on a rather cold day and night. Not wanting anyone to realize what a fool I had been, I decided to let the hen sit out the allotted span and then throw the eggs away, saying they must have been stale and had not germinated.

Ten days *after* the normal incubation period I thought it would be better to smash one of the eggs to see if they really were bad. The egg was flung with much force on to the hard gravel, but nothing happened. The process was then repeated with much more vigour, this time the shell cracked and blood poured out and a faint cheeping was heard; on picking up the damaged egg a tiny beak was seen apparently gasping its last. Believing in the old adage "while there's life there's hope", the much-damaged egg was put back under the hen. The next day the shell had disappeared and running about at lightning speed was a beautiful little Crossoptilon chick. I believe the Chinese name "Manchee" means the bird that can run faster than a horse. I can guarantee that no one on foot could ever be able to overtake one of these birds.

The next day another little chick was seen, but alas, just as the grille was being lowered between the coop and the run it shot out from under the hen into the run, the grille fell on the bird's neck and after a few convulsive struggles the tiny body flopped over, became limp, and appeared to breathe its last. Being in a hurry I left the body until later in the day, but when I came to the birds again it wasn't there and the next day two very lively chicks were seen running about the pen. They flourished exceedingly, until they were too big for the run and were then put with their older brothers and sisters, who chivvied them around with their mock fights and kept them from the food dishes.

The two poor twins started to grow listless and mope, they became dejected and ill so, having nowhere to put them, I set them free in the orchard. At first they hung about the birdroom, looking for scraps of food and odd mealworms which managed to get out of the breeding box. In the course of time they grew much better, due to feeding on

all manner of things, grass in particular, and, to my sorrow, rare bulb species which they dug out of the rockeries. Gradually the menu was extended to include all manner of things, raspberries, alpine strawberries (*Frais du bois*), insects; they played havoc with the lettuce bed in the kitchen garden, and all the time they dug everywhere, but mealworms proved the factor which rendered them tamer than domestic poultry. Used properly, mealworms will tame almost any bird. The larger of the two we called "Emma", in remembrance of a female given to me many years ago by Mr. Delacour, a bird of great character. However, "Emma" turned out to be a male and his mate a female. The latter was always shyer than her brother, in fact when first let out she was very wild and, indeed, I often thought she would fly away, in fact she once did, but we got her back again. It is useless to pinion these birds when chicks, for besides their swiftness they are remarkable for their jumping propensities, they can easily leap on to a 8 or 9 ft. fence or shed. And it's next to impossible to catch a Crossoptilon when once thoroughly frightened unless it is cornered, and it is never wise to handle them, for no bird loses its feathers so quickly. When one of these birds has lost its confidence in humans only complete incarceration will keep it from flying or running away.

For a long time after the male became so tame the female stayed in the background. "Emma" always thought of me as another Crossoptilon and, in the manner of his species, he talked to me all the time I was around. A better scientific name for the species would be *C. garrulax*! All the time these birds are together they hold long conversations with each other. Beebe mentions this in his study of the birds in their native state. In time I learned quite a bit of their language and what a rather loud, snake-like hiss, which is very seldom heard in captivity, means, which is "I am not annoyed but I don't like what you are doing". The pair would go every day to their parents' aviary and spend many hours conversing with them. "Emma" seems to have a great aversion to the glass vessels which are used for the nectar-feeding birds, these he will take up when they are being collected or being washed and will deliberately break them one by one. Why he does this I can never make out.

He would jump on to my knee if I was sitting down and let me handle any part of him, but he usually hissed when I touched his tail, though he did not move away. The tail of the Blue Crossoptilon is remarkable in that it is composed of twenty-four feathers, which is more than that of most other birds except the Bulwer's Pheasant. The central feathers are from 18 to 24 inches long and the ends curve downwards, the webs are very disintegrated and are like long fine hairs and in old birds are 8 to 10 inches long and when used in the plumage trade are known as "glycerined ostrich feathers". The outer tail feathers are normal, the lower half being white and the end half being iridescent

teel-blue. The outer and middle tail feathers gradually integrate one with another, in a manner difficult to explain.

One unfortunate thing about the Crossoptilons is that they are very prone to feather biting, not of their own plumage but that of their mates. As they usually roost together, head to tail, they indulge in a kind of feather-biting competition, which soon renders their nether regions a very unsightly mess. I keep the hen separate from the cock, except during the breeding season, this seems to be the only way of keeping their plumage perfect.

On the whole the birds are very good tempered, except with other species of pheasants, which they will immediately start to kill. Even if one catches the victim in time the aggressors will continue their attacks by jumping up and pecking it when one is carrying it out of the aviary. With all other species I have found them perfectly safe, though they will not stand any interference from any bird. One pair share an aviary with a pair of Choughs and when these were first placed with the Crossoptilons they commenced, in the usual crow-like way, to tease and play jokes on their companions ; they very soon put the Choughs in their place and woe betide them if they ever try any tricks these days.

Strange to say, these two species are also companions in the high and remote regions which is their native habitat, at from 10,000 to 16,000 feet. Amongst themselves they are very peaceful, except when young they indulge in a great deal of mock fighting, perhaps more so than any other pheasant, but when they have got rid of their youthful inhibitions no bird could be less aggressive ; in a wild state they are highly gregarious.

Feather biting is even worse in the Brown species and one rarely sees one of these birds whose feathers are not completely ruined by this unfortunate habit. Of course, if one has a big enough estate the best thing is to have them loose, like domestic fowls ; they will stay around the house, but are apt on occasions to wander, though if left alone they always come back, but the sight of so strange a bird as a Crossoptilon is sure to cause a hue and cry and the poor bird is so chivvied and chased by both humans and dogs that it loses its sense of direction as in the end it is chased further and further away from its home.

Another thing, with keeping the birds at liberty they are certainly not a gardener's friend and, leaving rare bulbs, etc., aside, they are apt to think that one's kitchen garden produce is grown solely for them and, in the end, one has to resort to the local greengrocer for one's vegetables. If one does not mind all this, one will have delightfully tame and intelligent pets which are also feather perfect, and a feather perfect and tame Crossoptilon is a very beautiful creature.

It seems a pity that these extremely interesting birds, which look like meeting with extinction in the near future (in fact, the Brown species

is thought to have become almost extinct through killing and deforestation in its native haunts on the mountains of Shansi and Chihli, in North-western China) are not more widely kept and bred, for no birds are easier to rear than these. One wonders what will happen to the genus *Crossoptilon* now that Tibet, Szechuan, Yunnan, Shansi, Kokonor, and Kansu, the home of these birds, have been "liberated", as the Communists call their occupation, from the domination of Buddhism, a gentle and enlightened religion which teaches the sanctity of all life. One wonders too, what will happen to the other splendid pheasants, of which we know so little, which inhabit those lofty regions, the Chinese and Sclater's Monal's (I consider myself very lucky to have seen living specimens of the former, one of the most magnificent of pheasants, when in China in 1936, being one of the very few Europeans to have done so. These birds were later shipped to Europe but died *en route*), the Tragopans, the Koklass, and the uniquely coloured Blood Pheasants (of which it seems less than ten individuals have ever reached Europe and of which thirteen sub-species are known), not to mention various other species.

After reading the late Hachisuka's recently published book on the extinct birds of the Mascarene Islands, in which we read "no other part of the world . . . contained such an extraordinary avifauna . . . and nowhere was the destruction more rapid or complete" one contemplates on the question, if Buddhists had discovered these fair islands would we not have with us to-day all those many and fantastic forms of avian life, which were so swiftly swept to oblivion after the discovery and occupation by the Portuguese, Dutch, French, and English, and which for untold æons of time had known no enemies until so-called Christian Man came on the scene. Forty-seven species were exterminated, including a huge 6 ft. high, white and red water-hen, the giant black Ground Parrots and, amongst others, the very Dodo itself. There may have been other species, we shall never know, for all we have to tell us of those exterminated are an odd stuffed specimen or two, a few bones and skeletons, notes in ancient manuscripts, or mention in some aged tomes on travel written by those who visited those far distant isles, the reading of which leaves the bird-loving ornithologist sick at heart at the sadistic ways of mankind. Sad to say, the same story is being enacted all over the world to-day, in spite of the endeavours of those who try to preserve our great heritage.

To get back to Crossoptilons, when in California a few years ago I saw hybrids between the White and Blue species. In shape they were exactly like the Blue, which is different to that of the White. These birds were most beautiful and attractive, being of a pale lavender blue. I do not know if any of them are left as I understand that Mr. Gibson, on whose ranch I saw them, has disposed of all his vast collection of birds. As mentioned before, it is not known if the Brown Crossoptilon

still exists in its natural habitat, which was the western mountain ranges of Shansi and Chilli, in China, most parts of which have become practically desert regions with the continual deforestation and subsequent erosion. It seems to have been introduced into Europe nearly a hundred years ago and since then few wild specimens have reached us. The breed is therefore very inbred, which accounts for the low fertility of the eggs. To save this bird it seems that it will be necessary to cross it with the Blue to ensure fresh and stronger blood and then breed back again to the pure Brown. Though a free breeder when it first arrived here, it is becoming very much rarer in captivity owing to the cause mentioned above and everything should be done to save the species while there is yet time.

As to the White Crossoptilons, very few Europeans have ever seen these in their native haunts, as they live in probably the most inaccessible and remote parts of the world and which, no doubt, will always remain so owing to the difficulty of any transport ever reaching there. Their habitat is in the high Eastern Himalayas, in that part of the world where Tibet, Burma, and China meet. We are told they range from 10,000 to 16,000 feet and upwards. The existence of these birds has been perpetuated by the influence of the kindly Buddhist monks, whose monasteries are situated in those lofty and distant regions. I was fortunate enough to see some of these wonderful birds whilst in California, where a few were sent in 1936. Unfortunately they are not prolific like their congenitors and very few are bred. These lovely birds are snow-white, their immaculate plumage being set off by the scarlet face and legs and the brilliant, iridescent, purple-blue tail feathers. The story of how the first Blue Crossoptilons were procured in 1929 and of how they were first carried in baskets by coolies, then on the backs of donkeys, and finally by river boat during a journey of over six months' duration from Kansu, in the far interior of China, several thousand miles to Shanghai, is told by Herr Hampe and quoted by Mr. Jean Delacour in his fine book *The Pheasants of the World*, and makes fascinating reading.

* * *

BLUE RINGNECK PARRAKEETS AND A “PIED” RINGNECK

By EDWARD J. BOOSEY (Keston, Kent, England)

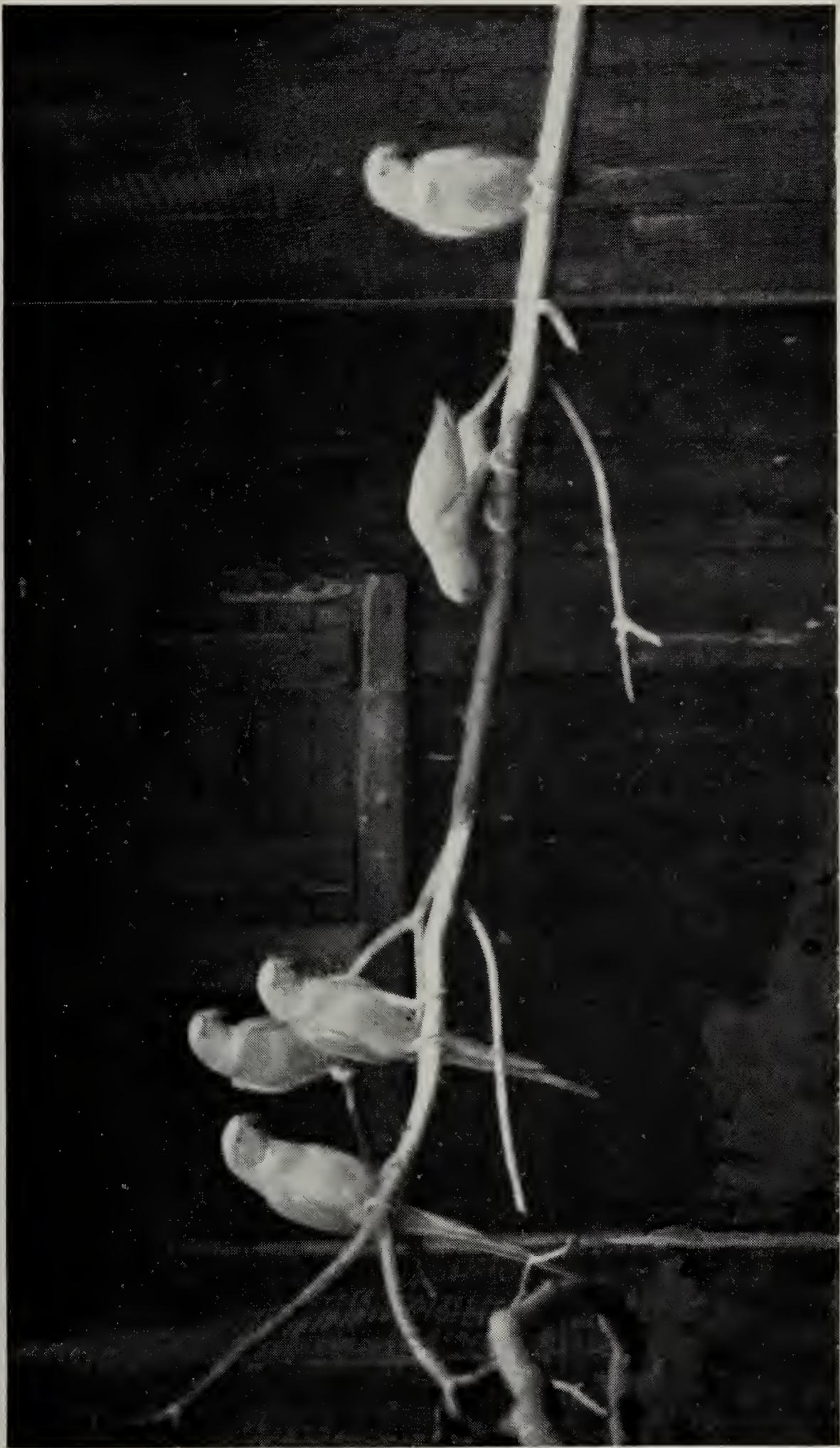
I thought the accompanying photograph of the brood of five young Blue Ringneck Parrakeets bred here at the Keston Foreign Bird Farm during the 1956 season might be of interest. They are the progeny of the late Duke of Bedford's famous original breeding pair of these birds, which came to Keston on his death and have since reared ten young ones in all—one in 1954; four in 1955; and five in 1956. Incidentally, their latest brood is, in my experience, just one more than Ringnecks generally produce—their broods usually consisting of threes and fours.

When one takes into consideration the fact that they had already reared numerous young ones at Woburn before they came to us, it will be seen that, in sharp and refreshing contrast to most rare and beautiful colour “sports” they are a truly wonderful breeding pair, even judged by normal standards. Nor is this the only respect in which they are remarkable, for the attitude of the sexes one to the other is in their case reversed. Usually, of course, with Ringnecks, it is the hen who “wears the trousers” and is often very snappy and short-tempered with the cock, except when she is actually in breeding condition.

With these two, however, the position is exactly the opposite, the cock being at all times the master and lunging at his wife should she attempt to sit too close to him, and I have even seen him do this during the breeding season, though a few moments before he had been feeding her as she put her head out of the nest-box. It may be remembered that the late Duke referred to him as a bird of funny and uncertain temper and thought he might eventually need careful watching with his newly fledged family, although I must say I have always found him entirely exemplary in this respect and a model parent in every way. Altogether he adopts a typically mid-Victorian attitude towards his wife, but in extenuation it must be said that the number of their offspring is comparatively quite up to mid-Victorian standards, too!

I only wish the accompanying photograph could be in colour, and for those who may never have seen a Blue Ringneck I would add that they are extremely beautiful birds of a soft yet rich shade of powder blue which, in the cock, is particularly vivid on the crown and forehead and which makes a lovely colour contrast to the coral red of the bill.

While on the subject of Ringnecks, I think a short account of a very unusual and colourful Ringneck “sport” we have might be of interest, as it is the only one of its kind I have ever seen. It was discovered in one of the London bird shops by our General Manager,



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To face p. 58

YOUNG BLUE RINGNECK PARRAKEETS.

[Alec Brooksbank



[P. Talbot-Ponsonby

MACPIE, GOSLING AT 3 DAYS.

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Mr. Cummings, and I would call it a pied Ringneck, as its appearance is somewhat reminiscent of a green and yellow pied or harlequin Budgerigar.

It is not an easy bird to describe but I hope the following may give, anyway, a rough idea of its general appearance. It is a cock and is in every other respect a normal green, except for the large areas of bright yellow in its plumage and the fact that the two central tail feathers are particularly blue, being only faintly tinged with green, while the outer ones are mainly yellow. The usual black and pink neck-rings are present, as is the area of bluish-mauve at the back of the head, but on the head itself there is some yellow in the region of the forehead. The mantle and the flight feathers are pure bright yellow, while the upper breast is yellow of a rather paler shade merging into green on the lower breast and belly.

It is a great pity that, with the Ringneck family, the breeding of colour varieties is such a very long-winded process, but I suppose the eventual hopes from this bird would be that, about a decade hence, it might be the ancestor of evenly marked piers and normal-eyed yellows—as opposed to pink-eyed lutinos. I only wish the present state of the world was stable enough to allow one to hope that such long-term projects had a reasonable prospect of eventual fruition.

Unlike in the days of my youth—planning ahead seems, nowadays, the essence of folly—nevertheless, I cheerfully go on doing it!

* * *

THE 1956 BREEDING SEASON AT THE WILDFOWL TRUST

By S. T. JOHNSTONE (Slimbridge, Glos., England)

During the past spring and summer the weather can, with justification, be blamed for considerable losses amongst our young birds. Continuous rain and cold in June and July caused havoc, particularly with the ducklings. One recalls two heart breaking weeks in June when over a hundred babies were lost from chilling and allied troubles. Nevertheless, it was a pleasant surprise when figures were assessed at the end of the season to find that we had had our best breeding season in the ten years that the Trust has been established. The figures are as follows :—

<i>No. of species breeding.</i>	<i>No. of kinds reared.</i>	<i>No. of cygnets.</i>	<i>No. of goslings.</i>	<i>No. of ducklings.</i>	<i>Total.</i>
86	67	5	171	326	502

We have had our most successful season with the Hawaiian Geese. Sixty-two eggs were laid, of which twenty-two were fertile. Of the

sixteen that hatched fifteen were reared, and a further three were reared from a pair under the care of Mr. Terry Jones, at Leckford.

Cuban Whistling Duck (*Dendrocygna arborea*), Wandering Whistling Duck (*Dendrocygna arcuata arcuata*), Magpie Goose (*Anseranas semipalmata*), Bewick's Swan (*Cygnus columbianus bewickii*), Lesser Scaup (*Aythya affinis*), Comb Duck (*Sarkidiornis melanotos*) and the South American Comb Duck (*Sarkidiornis melanotos carunculatus*), Common Golden-eye (*Bucephala clangula clangula*), Goosander (*Mergus merganser merganser*), were reared for the first time at Slimbridge, indeed, the last seven kinds, we believe, for the first time in England.

Some notes on the Bewick's swans have already been given. Of the rest, by far the most interesting is the breeding of the Magpie Goose. We have in our collection a pair imported from Sydney in 1949 and an old female which has been in this country since pre-war days. They are kept in our Wood pen along with a pair of Black Swans, Whistling Ducks, and Muscovys. There is a 4 ft. privet hedge bounding the pen on one side and it was in this that in 1955 a male was found to be making the rudiments of a nest. The activity was soon abandoned and when a similar occurrence took place this year we were not unduly elated. However, some days later the old female joined the male in building a second nest on the ground, some two or three yards from the original site, composed of twigs, straw, and nettles, very like that of a swan in design. In the course of the next four weeks a further five nests were built in the nettles at the back of the pen and during the last week the female was seen to be getting very heavy. On 15th August she was sitting on the latest nest. When approached she emitted a high-pitched scream and the male came striding to her assistance. Both birds stood on the nest with tails in the air, heads lowered, and wings outspread and one could see the first roundish white egg had been laid. During the next twelve days a further seven eggs were laid. They had roughish shells and were dead white in colour. The average size being 73×56 mm. and weight 1.15–3 gm. As the eggs were laid they were replaced by dummies and when the clutch was completed two real eggs were left in the nest for a few days after incubation commenced. It was found that both birds shared in the sitting and that the eggs were never left. The two eggs were removed and added to those that had been placed under the broody bantam. For the rest of the incubation period, when the broodies were being fed and exercised, the eggs were kept warm by use of a spare bantam. An incubation period of around thirty-five days was expected and it was with some surprise that we found the first egg chipped after twenty-seven days. Five goslings hatched on the 28th day, the other three eggs being infertile.

The downy young are striking little things, quite unlike those of any other of the Anatidæ. The head and neck are a cinnamon red reminiscent of the male Red-crested Pochard. The body is a dark

grey above, with an absence of barring, and the under parts a pale grey. The bill, yellow in colour, is large and powerful, the nail being particularly prominent, and the lores are bare. The toes are very large in proportion to the rest of the gosling and the yellow tarsus is very sturdy. These babies were very aggressive to each other and had great pecking matches as soon as they were able to stand. The diet consisted of soaked biscuit-meal with a 25 per cent protein content, plentiful supplies of duckweed, chopped plantain, grass, and lettuce. They were given quantities of fresh-water shrimps and these they preferred to all else. When food was given to them they would emit a high-pitched sibilant call, similar to that of passerine nestlings at the approach of the parent bird. Feathering commenced at twenty-five days and at the same time the bill began to turn black. The down was lost completely at six weeks and the adolescent plumage was a black head and neck, mantle, and upper parts, except for a white rump, with the under parts and breast shaded from pale grey to white. The eyes do not as yet give the impression of being so far round on to the frontal aspect of the head as in the parent birds and one is not conscious of their use of binocular vision as in the adults. The forehead is not yet bare and the characteristic bump not yet developed.

A South American Comb Duck bred at New Grounds in 1955 but lost its brood within two days. In 1956 three South American Comb Ducks and one of the Old World race nested. In each case the eggs were laid in little grape barrels that had been sited some two or three feet above the ground in willow trees. The incubation period was thirty-one days for both forms. The creamy white eggs had a thin, shiny shell and the average size for twenty-five specimens was 77×37 mm. and average weight 44 gm.

The ducklings are obviously near relations of the Muscovy as regards shape and dual colouring of the tarsus. The downy pattern was cap, back of the neck, and upper parts of the body brown, the wings and body being barred with yellow. There was a brown eyeripe and the throat, breast, and under parts were yellow.

The first hatching did not thrive at all and showed little inclination to feed. They soon succumbed in the cold, wet weather. The use of infra-red lamps had a very favourable effect on subsequent broods. The ducklings showed great interest in life, ate well and, apart from one or two weaklings, grew rapidly.

* * *

BREEDING THE SENEGAL PARROT

(Poicephalus senegalus)

By GERNER PETERSEN (Glostrup, Denmark)

(Reprinted, by kind permission, from *Stuekultur*, March and April nos., 1956. Translated by Paul Hansen.)

In December, 1951, I bought two Senegal Parrots, which later turned out to be two cocks ; one died in September, 1953, but the following day I was lucky enough to be able to buy a female. When I placed it with the cock they immediately showed great interest, and were very pleased with each other.

In the summer of 1954 the pair was placed in an outside aviary with a nest-box, which seemed to interest them but, apparently on account of too much disturbance from the other birds in the aviary, they did not show any signs of breeding.

In spring, 1955, we tried again, this time indoors (in my bedroom, which faces north), in a parrot cage measuring 44 cm. by 44 cm. with a height of 60 cm., and with a nest-box measuring 25 cm. by 25 cm. and 35 cm. in height placed outside on the cage, which was put against a warm chimney. On the 17th March the first egg appeared and, with a day between each, in all four were laid ; one of them, however, was destroyed. On the 15th April the first sounds of young were heard from the nest-box, and examination showed two youngsters, but one died on the 20th April and the other on the 27th.

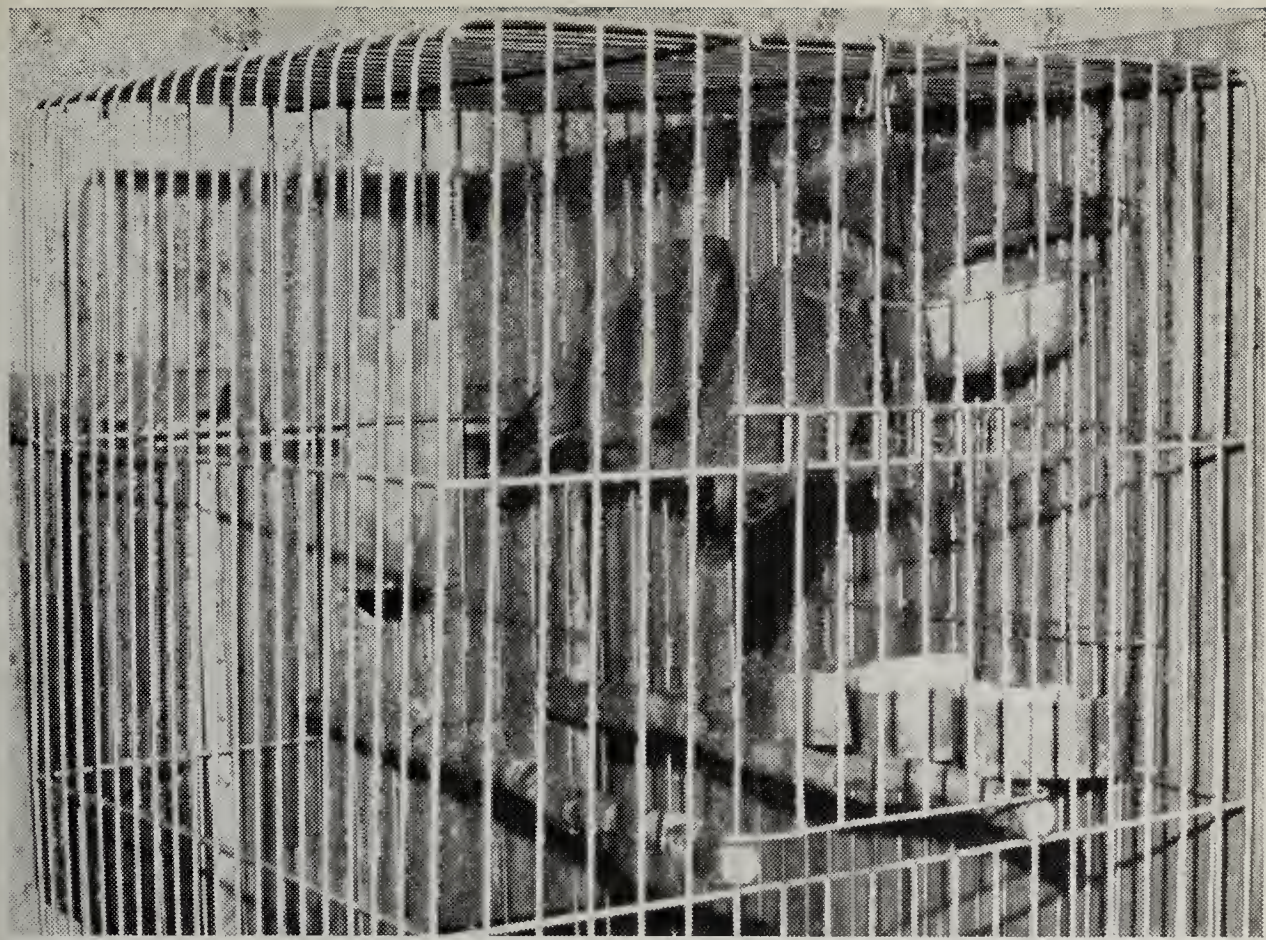
In the summer of 1955 I tried again in the garden aviary, also without any results on account of disturbances. In October, 1955, the birds again were placed indoors in the parrot cage with the nest-box on the outside. The birds were mating and were apparently in very fine condition. The first egg was laid on the 2nd January, 1956, and three in all appeared.

During the whole period of incubation both the parents spent the time in the nest, only one at the time coming out for feeding.

The 27th January sounds were heard from two youngsters ; one of them, however, died on the 2nd February, though the other was thriving very well.

As soon as the hen left the nest, which at first she only did in order to relieve herself, the youngster kept up a continual noise until she came back. During the first four weeks the cock was feeding both the young and the hen. The young had quite white down.

As rearing food I used sprouted seed in a mixture of sunflower seed, hemp, canary, white and golden millet, and dry seed in the same mixture ; in addition, plenty of millet sprays, hard-boiled egg, and apples. In the bottom of the nest-box was placed 3 cm. of damp peat-moss.



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[Mortensen

SENEGAL PARROTS AND YOUNG IN CAGE.



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[Mortensen

YOUNG SENEGAL PARROT.

When the youngster was five weeks old the feathers started to grow, first on the head, afterwards on the wings and the tail, and lastly on the body. The eyes were very dark, but at approximately ten weeks the yellow rings started to show very faintly, but at the time of writing (April, 1956) are not yet very colourful.

The first feathers were very dull in colour, but when the young left the nest, at nine weeks old, it was fully feathered and the colours most beautiful and clear like the colours of the parents. Before it left the nest the parents had been calling for it for some time, enticing it to take the great step out in the world, but it never went further than looking out of the nest-hole, and here it was fed. It was very early in the morning on the 30th March when it finally came out ; at first it was very unsteady on the feet, but the unsteadiness very soon left it altogether. Gradually the hen seemed less and less interested in the young, leaving the cock to do all the feeding, at which he was very good. Since ten weeks old it has been feeding for itself, occasionally still begging a little from the cock.

The youngster, which is a little bigger than its parents, with a comparatively smaller head and beak, looks very promising, is sound and in fine condition, and starts every day with a good bath in the bird-bath attached to the cage. I have had it in my hand a couple of times ; it is very quiet and does not try to bite.

* * *

BREEDING THE CRIMSON-WINGED PARRAKEET IN CALIFORNIA IN 1956

By DAVID M. WEST (Montebello, California, U.S.A.)

This lovely Australian psittacine has never been too easy to breed here in California. The result is that they have always been scarce, and the breeding records not too numerous.

In recent years the San Diego Zoo has had several successful breedings, but in private collections the only recent result that comes to mind is that of G. Rayson Brown's 1955 success with two young reared.

My own two pairs have had a four-year record of every possible vagary. They have laid every year, but sometimes they refused to incubate, other times have laid from the perch, smashed the eggs, deserted them, etc. It was, therefore, without much optimism that I greeted the current breeding season.

This season (1956) both pairs appear to have turned over a new leaf. To be sure both males continued driving and heckling their mates, but every now and again they would stop long enough to feed them ! The hens, apparently anxious to justify their long non-

productive sojourn in the collection, responded by beginning actual nesting operations six weeks earlier than in any former year. By 2nd March both hens had disappeared from sight, and sat very steadily until 24th March when young could be plainly heard. As the nest-boxes were placed very high, and a small ladder would have been needed to make an inspection, none was made. The usual grandfather-clock nest was used, the bottom being filled with wood chips and sawdust.

From the time the youngsters hatched until they emerged from the nest, some five weeks later, the parents were perfect in every way and gave me no worry whatsoever. Large amounts of food were consumed, and during the first few weeks I was regularly carrying in three bucketfuls of *poa annua* to each pair daily. In addition, each pair were fed canned corn that had been washed and rinsed in clear water before being given to the parents. Of this they were terribly fond, and each pair ate a small can of it daily. Both males fed their respective hens assiduously, and after about two weeks the hens began to spend longer periods away from the young. The males were only very rarely seen actually to enter the box, and then rather hesitantly.

The first youngster appeared on about the thirty-fifth day and looked smaller and duller than the mother. The others followed within a few days, and were active and good flyers from the first. Some of the youngsters have more red on the wing than others, but this is apparently not a good or valid indication of sex. One of the adult hens has much more red on the wing than the other hen.

The male parents have proved to be very tolerant of their offspring, and have not driven them about. This is in contrast to some other species, as the Red-rump for example, which will sometimes attack the youngsters if a second nest is planned.

The aviary of the first pair was 18 feet long, 3 feet wide, and 9 feet high. The second pair were in an aviary about 24 feet long, 3 feet wide, and 9 feet high. Both nest-boxes were hung under shelters, and were filled with rough wood chips. In addition to the usual dry seed mixture, seed was thrown on the dirt floors to sprout, and soft food such as soaked bread, oats, etc., was also provided. Naturally, large amounts of greens were provided, and fruit, such as orange, apple, and fresh corn on the cob also provided, and relished.

I am very pleased to report this success, because Crimson-wings are a little difficult to rear, and it has given me a great deal of pleasure to be fortunate enough to rear some this year after four years of negative results.

The first pair reared two, and the second pair reared two more. Both pairs nested a second time—but one pair deserted their nest during a heat wave in May. The other pair successfully reared two more—thus making a total of six reared for the year.

A FEEDING METHOD FOR BREEDING FINCHES

By HYLTON BLYTHE (Thorpe Bay, Essex, England)

For some years I have realized that breeding pairs of finches, both British and foreign need more nutrition than is available in hard seed. If necessary proteins and vitamins are absent in the spring diet the eggs will be too poor in quality to sustain life until the chicks can be fed by the parent birds, resulting in "dead in shell". Then, if the regurgitated food is lacking in essentials, chicks will fade out after a few days.

In addition to the usual seeds and greenfood a soft food seems to be the answer and after several years of unscientific experiments starting from bread-and-milk, I evolved a food last year which proved very successful.

This formula aims to provide a food which is hygienic and consistent in quality and supplies high-class protein and the necessary vitamins A.D.B. Bread rusk is used as being pure and free from mould and consistent in quality. It is obtainable from the butchers quite cheaply.

Here is the formula :—

- 1 lb. Bread Rusk.
- 2 oz. Skimmed Milk Powder.
- 1 oz. Wheat Germ (Bemax).
- 1 oz. Bran.
- 1 oz. Peanut Oil.
- 1 oz. Cod Liver Oil.

The C.L.O. is mixed with the peanut oil and added to the rusk, well stirred in, and the other ingredients added. If feeding Softbills add 1 oz. powdered yeast and 2 oz. of good fish meal. Keep in an airtight tin and make sufficient for a week or two. Avoid strong smelling oil, for it will be decomposed and useless, if not actually unhealthy. This mixture only needs to be moistened with water and allowed to stand for a few minutes before crumbling. In hot weather add more water.

Through the years several friends have tried out my experimental batches and this latest mixture was successfully used with British and foreign finches. I also found that newly imported foreign finches greatly benefited by this mixture, feeding in small quantities frequently to prevent fouling and re-infection where there are large numbers of birds.

I am sure this food is on the right lines and pass on this information to breeders. I shall be pleased to have observations and suggestions for further improvement.

* * *

THE NATIONAL SHOW 1957

The 46 classes allocated to foreign birds at the National Show this year were the same number as at the 1956 event. With the exception of the class "For all seedeaters larger than a Java Sparrow" which had no entry, the classes were well filled, and the total entry was about 600.

Apart from the fact that there were a number of very rare exhibits some being shown for the first time in this country, the average quality of all the birds staged was extremely high. The majority of the placings for seed-eaters were made by Mrs. E. M. Schenck and Mr. W. A. Upson, as were those in the classes for Starlings, Mynahs, Toucans and Quails. Mr. J. J. Yealland and myself placed the rest of the soft bills, also the seed-eater classes for Weavers, Whydahs, Gouldians Australian, etc., finches, and other seed-eaters not larger than a Java Sparrow. Mr. Claude M. Payne made the awards in the sections for parrot-like, abnormal coloured foreign, and hybrids with one or both parents foreign.

Mr. R. C. J. Sawyer, with exhibits shown in his usual immaculate style, won the Ezra Memorial Cup, National Rosette, and Award of Merit for best foreign bird, Duke of Bedford Trophy and National Rosettes for best large seed-eater and best insectivorous bird. Mr. G. M. Baker winning the National Rosette for best lovebird.

"Cage Birds," with Mr. G. E. Weston as Show Manager and Mr. F. W. Batchelor as Show Organizer, together with their many helpers, must be complimented on their excellent organization of such a great and important an event as this Exhibition of Cage Birds.

A very fine pair of Gold-breasts belonging to Mrs. P. Henderson won a large class (25 entries) for Red-eared, Orange-cheeked, and Golden-breasted Waxbills, etc., followed by C. W. Smith's and G. E. Whitmore's Fire-finches in 2nd and 3rd places.

St. Helenas and Lavenders were 1st and 2nd for H. Mitchell in the next class of 18 entries, followed by Mrs. K. M. Scamell's Cordon bleus and G. E. Whitmore's Lavenders.

The class for Silverbills, Combassous, Grey Java Sparrows, and Singing Finches was won by A. H. Hayes's Silverbills, followed by V. J. Price's Green Singing Finches and L. Back's Grey Javas. (18 entries.)

A really excellent pair of Red-headed Finches belonging to N. Parker had 1st place, in a class of 14, followed by two nice pairs of White Javas shown by L. Black and Mrs. K. M. Scamell in 2nd and 3rd places; 4th Cut-throats.

There were 17 entries in the class for Mannikins, 1st and 3rd places going to W. Dyson's White-headed and Rufous-backed Mannikin. H. Mitchell coming 2nd and 4th.

The two classes for Bengalese were well supported and the majority of exhibits were of very good quality.

There were four classes for Zebra Finches with from 16 to 27 entries per class, quality was good and a continued improvement in size and type was evident in the majority of exhibits, a number of good pairs being unplaced.

The class for Buntings was headed by Mrs. K. M. Scamell's beautiful pair of Golden-breasted shown in lovely condition, H. Price being 2nd with a nice pair of Lazulis, and A. R. Hellyar 3rd with Rainbows.

The Weavers class was won by C. W. Smith's well-shown pair of Red-billed, followed by G. Anderdon's good pair of Scaly-crowned, Mrs. Field and Son's Rufous-necked coming 3rd.

A very good Queen Whydah was 1st for G. E. Whitmore in the class for Whydahs, followed by Mrs. Scamell's Paradise.

In the class for Gouldians and Parrot Finches, including Pin-tailed Nonpareils, G. E. Whitmore's very good pair of Red-headed Gouldians were the winners, followed by Gouldians belonging to G. Deans and J. R. Jagger.

The mixed class for Australian finches was headed by a lovely pair of Parson Finches belonging to K. J. Keyworth closely followed by G. E. Whitmore's very good Diamond Sparrows in 2nd place, English and Gee's Hecks 3rd, and H. Mitchell's Cherry Finches 4th.

A class containing Violet-eared, Sydney Waxbills, Melbas, etc., was headed by Mr. and Mrs. Fiveash's Violet-eared cock shown in lovely condition and very steady, closely followed by G. E. Whitmore's lovely pair of Violet-ears which were not looking their best. 3rd and 4th, H. Mitchell's Melbas and Violet-eared, both good exhibits.

The Cardinals and Grosbeaks class was won by G. E. Whitmore with an Evening Grosbeak in perfect condition, followed by W. Rolph's very nice pair of Chinese Hawfinches in 2nd place. S/Ldr. and Mrs. Everitt's Pigmy Cardinals coming 3rd, Virginian Cardinal 4th, Chinese Hawfinch 5th, Pope C. 6th, and a very rare Peruvian Brown Grosbeak 7th shown by L. S. Fox. I believe this to be the first time this species has been exhibited for competition.

The class for all other seed-eaters not larger than a Java Sparrow, with 25 entries, was won by W. Dyson's very fine pair of Peter's Twinspot Waxbills, the hen being one of the best coloured I have seen, closely followed for 2nd place by G. E. Whitmore's Green Twinspots, H. Mitchell's Fire Finch 3rd, Crimson-wings 4th, Quail Finches 5th, Junco 6th, Warbling Finch 7th.

Birds of Paradise and Bower-birds class was won by R. C. J. Sawyer's pair of Twelve-wired shown in perfect condition, except that the cock had only 6 wires showing, the same owner also gaining 3rd place with a very nice Regent Bower-bird in very good feather. Second place went to G. E. Whitmore's magnificent Red Bird of Paradise which

unfortunately had a number of missing plumes, 4th to the Satin Bower-bird.

Humming Birds produced 11 exhibits, all in excellent condition the class being headed by G. Anderdon's charming and very active White-bellied Emerald closely followed by Mrs. D. K. Draper's lovely Black-bellied Mango. R. C. J. Sawyer came 3rd with a nice Swallow-tailed, 4th E. C. Lewis's Copper-tailed Mango, 5th P. Coleman's Dusky Jacobin followed by a Ruby and Topaz and a Waterton's Wood Nymph.

Nine entries made up the class for Sunbirds which was won by W. Dyson's extremely nice pair of Amethyst, 2nd R. C. J. Sawyer with a very fine Taccaze, 3rd Mrs. Draper's Yellow-breasted in lovely condition, 4th G. E. Whitmore's Marico, 5th Mrs. K. M. Scamell's Scarlet-throated.

The class for Sugar Birds was headed by Mrs. J. Webb's very nice Yellow-wing, closely followed by Mrs. Scamell's Blue in 2nd place and the same owner's Black-headed 3rd, both very well staged. G. Anderdon was 4th with Yellow-wings and Sawyer 5th with a Cape.

Zosterops and Pekin Robins made up a strong class with 15 entries. R. C. J. Sawyer's Red-flanked Zosterops gaining 1st place, a very nice pair and winning on rarity from Mrs. Draper's beautifully staged pair of Common Zosterops, which species also gained 3rd, R. S. Westlake, 4th V. J. Price's Pekin Robins, a very good pair. 5th and 6th awards also went to Pekins.

The class for smaller Tanagers was won by Mr. and Mrs. Harris' lovely pair of Blue-blacks, 2nd R. S. Westlake with another good pair of Blue-black not quite so well staged as winners. 3rd N. Parker's nice Silver-blue with K. J. Keyworth 4th and 5th with Many-coloured and Blue-black.

The larger Tanagers and Bulbuls was won by S/Ldr. and Mrs. Everitt's Brown-eared Bulbul, a very steady bird shown in perfect condition. 2nd G. Anderdon's extremely attractive Black Bulbul, 3rd a very good Maroon belonging to A. Hammond, not as steady as winners. 4th Mrs. Scamell's Red-whiskered Bulbul, another nice bird which was followed by the same owner's White-shouldered.

The class for Flycatchers, Redstarts, Chats, etc., was won by Mrs. Draper's Tickell's Flycatcher, J. E. Williams coming 2nd with his lovely Blue Mountain Robin in faultless condition, G. E. Whitmore was 3rd, 4th, and 5th with his Rufous-bellied Niltava, Noisy Robin-Chat and Natal Robin-Chat, three good exhibits. Sawyer's Japanese Blue Flycatcher and Narcissus Flycatcher, 6th and 7th.

Fruitsuckers, Thrushes, and Jay Thrushes had 14 entries and was easily won by R. C. J. Sawyer's rare and very lovely Swinhoe's Rock-Thrush, beautifully staged and in perfect condition, first time shown. 2nd Lord Gerard's excellent pair of Hardwicke's Fruitsuckers.

followed by another good Hardwicke's Fruitsucker belonging to W. Dyson in 3rd place with G. Anderdon's White-eared Jay-Thrush 4th.

Starlings had 16 entries and the class was headed by I. Williams's very good pair of Spreos; 2nd F. A. Hunt's equally good pair of Hildebrandt's followed by G. E. Whitmore's Purple-headed in 3rd place, a very nice pair in lovely condition. 4th S/Ldr. and Mrs. Veritt's Chestnut-bellied.

The Mynah class was led by S. R. Harris's Mynah, 2nd place going to K. J. Keyworth's beautiful pair of Mandarins shown in perfect condition. 3rd R. C. J. Sawyer's Golden-headed Mynah, the first I have ever seen and first time shown.

The class for Toucans and Touracos was won by G. E. Whitmore with his rare Knysna Touraco, A. V. Griffiths coming second with a very nice Cuvier's Toucan, 3rd N. Parker's Black-billed.

N. Parker won the class for Quails, Doves, and Pigeons with a good pair of Californian Quail, A. S. Woodward coming 2nd with a nice pair of Peruvian Pigmy Doves, G. Gaunt's Necklaced Dove 3rd, Californian Quail 4th, Zebra Doves 5th, and 6th and 7th places going to Chinese Painted Quail.

The class for all other insect, fruit, and nectar-feeding birds not larger than a Pekin Robin with 11 entries was won by R. C. J. Sawyer's Chinese Ruby-throat, beautifully staged in perfect condition. 2nd Mrs. D. K. Draper's Yuhinas, another perfect exhibit. 3rd W. Dyson's little Minivet, a rare exhibit and a lovely bird, unfortunately slightly rough in tail; 4th Sawyer's Chinese Yellow-bellied Tit, not in the condition of winners. Mr. and Mrs. Harris came 5th, 6th, and 7th with Yuhinas, Yellow-cheeked Tit, and Blue-winged Sivas.

All other insect-feeding, etc., birds larger than the Pekin Robin but not larger than the Glossy Starling with 14 entries was possibly the most interesting class in the Foreign Section as not only did it contain some great rarities staged for the first time, but any of the placed exhibits were good enough to head a class. 1st R. C. J. Sawyer's Parrot-bills, a lovely pair of birds, seen I think for the first time on the show-bench; 2nd G. E. Whitmore's excellent pair of Pied Barbets; 3rd Sawyer's White-collared Kingfisher, a really good young bird, 4th went to the same owner for a lovely pair of rare Dusky Miners, 5th G. Anderdon's Red-faced Mouse Bird staged in faultless condition. 6th N. Parker with a lovely pair of Black-headed Sibias. 7th Mrs. Scamell's Sulphury Tyrant, another grand exhibit.

The class for all other insect, fruit, and nectar-feeding birds was won by R. C. J. Sawyer's pair of Roul-Roul Partridges, beautifully staged in absolutely faultless condition. This pair went on to win the cup and Rosette for best foreign bird. The birds shown were father and daughter, the hen being one of the Roul-Rouls bred by Mr. Sawyer in 1956. In winning the award for the best foreign bird Mr. Sawyer has

established a record, for it is surely the first time this award has been made to an aviary-bred bird. 2nd B. Jolley's very fine Golden-breasted Woodpecker, 3rd G. E. Whitmore's Motmot in very good condition. 4th Sawyer's Sun Bittern. 5th and 6th Mrs. Draper's Naked-throated Bell Bird and Apostle Bird, both good exhibits, well staged.

All the varieties of Lovebirds at present available in this country were represented in the two classes allocated to them. The class for Peach-faced, Fischer's and Masked was won by Messrs. M. and F. Baine's Peach-faced of grand colour and size. 2nd V. E. Wills with a lovely coloured pair of Fischer's. 3rd another very good pair of Peach-faced owned by Messrs. Carr and Hobbs.

A.O.S. Lovebirds and Parrotlets was headed by G. M. Baker's magnificent pair of Abyssinians, the best I have ever seen both in size and colour. 2nd Mrs. Henderson's Madagascar's, a nice pair and not often seen. 3rd D. W. Thomas's Red-faced. 4th and 5th W. H. Adam's and Mrs. Scamell's Nyasas. 6th I. Forbes's Black-cheeked.

The class for Rosellas, etc., was disappointing and was won by G. M. Baker's Gold-mantled Rosella.

The class for Cockatiels, Ring-necks, etc., was won by D. Gaunt's Plum-head Parrakeets, a very good pair. 2nd R. C. J. Sawyer's Blossom-headed, another nice pair. 3rd P. C. James's Plum-heads. 4th G. Anderdon's Cockatiels.

Conures, Grass Parrakeets, Barraband's, Pennant's, etc., made up a class of 5 entries won by I. Forbes's pair of Conures, catalogued as Brown-eared, but undoubtedly Red-bellied, a species not often seen; 2nd A. V. Griffith's Tasmanian Rosella; 3rd H. Mitchell's Sun Conures.

The class for Lories, Lorikeets, and Hanging Parrots was won by G. E. Whitmore with his well-known and very rare Musschenbroek's Lorikeet in perfect condition, followed by R. C. J. Sawyer's Edwards's Lorikeet, another very good bird; 3rd G. E. Whitmore's very nice pair of Blue-crowned Hanging Parrots; 4th N. Parker's Black-capped Papuan Lories; 5th S/Ldr. and Mrs. Everitt's Hanging Parrots, a very interesting exhibit thought to be two Vernalis in immature plumage, but may easily prove to be a sub-species not previously seen on the bench.

The Grey and Amazon Parrot and Cockatoo class was won by Mrs. Ingram's Orange-winged Amazon for the third time, a rare achievement at the National; 2nd Lemon-crested; 3rd Grey Parrot.

The class for any other parrot-like bird not larger than a Grey was won by R. C. J. Sawyer's rare Racket-tailed Parrot which went on to win the Duke of Bedford Trophy for the best parrot-like, also National Rosettes for best parrot-like and best large seed-eater in the Foreign Section. The same owner's well-known Salawati King Parra-

et shown in faultless condition and pressing the winner hard came 1st. Major Dilwyn Jones came 3rd with a lovely pair of Meyer's Parrots; 4th Sawyer's Malayan Blue-rumped Parrot, a species not aged for a number of years.

Two hen Red-sided Eclectus made up the last class for parrot-like. Mitchell 1st. G. E. Whitmore 2nd.

The class for abnormal coloured Foreign Birds was won by R. C. J. Sawyer's attractive cream Zosterops.

W. R. PARTRIDGE.

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The Ezra Memorial Cup was presented by Miss Ruth Ezra and Mrs. C. J. Morny in memory of their late father, Mr. Alfred Ezra, F.B.E., who was President of the Avicultural Society for thirty years.

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LONDON ZOO NOTES

By J. J. YEALLAND

A pair of Cormorants collected on Lambay Island during 1947, hatched in January on the "cliff" in the Southern Aviary. Two eggs were laid and one chick, now about ten days old, has been seen.

The Cereopsis Geese that reared two goslings last year nested in December, but none of the five fertile eggs was hatched. Another clutch of two is now being incubated.

Birds new to the Collection are a pair of Chinese Crossbills (*Loxia erythrogastra albiventris*) and a pair of Yellow-bellied Titmice (*Parus cristatus*) presented by Dr. K. C. Searle. The Crossbills much resemble the Common Crossbill—a little smaller, perhaps, but not, in the present plumage, appreciably whiter on the underparts. The titmice are one of the smallest and prettiest species with their glossy black, white, yellow and greenish-grey plumage.

Mr. G. Newmark has sent a gift of a second Malachite-shouldered Quitsucker or Leaf-bird, a Crested Mynah, and a Malaysian Black-capped Oriole. Miss R. Ezra has presented two Golden Pheasants and Messrs. Brooke Bond and Co. a Sulphur-breasted Toucan.

Monsieur Delacour's very interesting note on the diet of the Humming Birds kept in Brazil by Dr. Béraut and Mr. Ruschi brings to mind the case of a female Sun Gem that has recently died after being here for $1\frac{1}{2}$ years. Without knowing the age of the bird at the time of its arrival and the expectation of life of these very small Humming Birds in the wild state, it would be impossible to judge

whether this is a good record or not. This particular bird was always hovering round the bottles containing fruit-fly pupæ and catching the flies as they came out and I doubt whether it would have lived so long had it not been for the amount of flies that it ate. If only spiders could be bred as easily as fruit-flies !

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BRITISH AVICULTURISTS' CLUB

The fifty-sixth meeting of the Club was held at the Rembrandt Hotel, Thurloe Place, South Kensington, S.W. 7, on Wednesday 13th March, 1957, following a dinner at 7 p.m.

Chairman : Miss P. Barclay-Smith.

Members of the Club : Miss J. Barnes, P. C. Bath, Hylton Blyth, A. W. Bolton, Miss K. Bonner, Mrs. V. M. Bourne, Captain A. A. Clarence, W. D. Cummings, M. F. Draper, W. T. Dring, Mrs. W. T. Dring, Squadron-Leader C. Everitt, Mrs. C. Everitt, Miss S. A. Fothergill, J. C. Garratt, Miss D. Gask, Dr. E. F. Gleadow, F. Grant, Miss M. Hagan, H. J. Harman, M. Hessey, Dr. E. Hindle, Dr. J. I. Hodges, Miss S. I. Hobday, G. T. Iles, F. E. B. Johnson, Miss S. I. Joseph, Dr. R. S. Kirk, R. G. Kirkham, Miss E. M. Knobel, Miss M. H. Knobel-Harman, Dr. F. B. Lake, G. C. Lynch, P. I. Maxwell, F. Mosford, G. S. Mottershead, S. Murray, Sir Crawford McCullagh, Bart., K. A. Norris, C. M. Payne, A. A. Prestwick, J. H. Reay, D. M. Reid-Henry, D. H. S. Risdon, S. Sanders, R. C. J. Sawyer, J. L. Sears, D. Seth-Smith, A. E. Sibley, H. A. Snazle, A. C. Soanes, E. O. Squire, Newton Steel, E. N. T. Van Wilmot, J. J. Yealland.

Guest of the Club : Professor Jacques Berlioz.

Guests : J. Bailey, Mrs. D. Barker, D. B. Barker, Mrs. P. C. Bath, A. R. Bull, T. Crewes, S. A. Croucher, Mrs. S. A. Croucher, Mrs. M. F. Draper, V. Faulkner, Miss H. Frampton, D. C. Garratt, Lord Gerard, Mrs. F. Grant, Mrs. F. B. Lake, E. C. Lewis, A. R. Lockie, Mrs. A. I. Lockie, F. W. Luck, G. T. Lynch, J. D. Macdonald, Dr. E. Macdonald, A. A. MacLaren, Miss E. E. Monnell, Mrs. S. Murray, Mrs. C. M. Payne, Captain R. S. de Q. Quincey, Mrs. J. H. Reay, Miss Roberts, Mrs. D. Seth-Smith, Mrs. E. N. T. Vane, Mrs. I. Wilmot, Miss F. Wood.

Members of the Club, 57 ; guests, 34 ; total, 91.

The Chairman extended a hearty welcome to Mr. J. D. Macdonald, a Principal Scientific Officer of the British Museum (Natural History). Many members had reason to be grateful to Mr. Macdonald, Head

the Bird Room, and his staff for the ready help and courtesy which was always shown to them when they had occasion to examine skins in the Museum collection. She was glad to have the opportunity of thanking Mr. Macdonald and of expressing the great pleasure it was to have him and Mrs. Macdonald as guests of the Club.

Professor Jacques Berlioz, of the Muséum National d'Histoire Naturelle, was then introduced. Professor Berlioz, the recognized world authority on Humming Birds, had come over from Paris specially to address the Club.

Professor Berlioz gave an absorbingly interesting life history of various species, and briefly described the best means of keeping them in captivity. A full account will appear in the next number of the Magazine.

At the close the Professor received a great ovation. Question time was unfortunately marred by a dance band in an adjoining room.

The next meeting of the Club is on Wednesday, **8th May**.

ARTHUR A. PRESTWICH,
Hon. Secretary.

COUNCIL MEETING

A Council Meeting was held on 13th March, 1957, in the Council Room, Zoological Society of London.

SOCIETY'S MEDAL

The Society's Medal was awarded to :

Mr. E. J. Boosey, for breeding the Cuban Amazon (*Amazona eucocephala*).

Mr. A. A. Prestwich, for breeding the Red-faced Lovebird (*Agapornis pullaria*).

NEWS AND VIEWS

Miss P. Barclay-Smith has been elected a Vice-President of the British Ornithologists' Union.

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Last year Madagascar Lovebirds were again available—at a price. Now Black-cheeked Lovebirds are being offered at £15-£18 a pair.

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Walther Langberg, Copenhagen, has two young Grey Parrots; one is being hand-reared by Mrs. Langberg and the other by its parents.

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H. Murray writes : " I am trying colony breeding with 19 Nyasaland Lovebirds this coming season. Last year I bred 15 young from twelve pairs."

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Mrs. A. Morgan successfully bred a Jendaya Conure in 1954. In 1955 the parents did not nest, but last year three good young ones left the nest on 26th August.

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O. Hirthe, one of the oldest parrot breeders in Denmark, has bred the Severe Macaw. At a recent Copenhagen bird show he exhibited the parents with their three young ones.

* * *

Jerome O. Wilson, Metairie, Louisiana, reports : " I have the very good fortune of having a breeding pair of Queen of Bavaria Conures. The female has laid and hatched three eggs. The young birds are now (1st February) thirteen weeks old."

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Folmer Prip, Copenhagen, writes : " Last year I only bred Pennant's, 4 Stanley, 3 Splendids, 2 Bourkes, and 2 Turquoise. A pair of Pale-headed Rosellas laid 17 eggs in 26 days. I took 10 of the eggs away, but the hen did not sit on the rest, as she started to moult. None of my other birds even made an attempt to nest."

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Sir Crawford McCullagh, Bart., reports his breeding results for 1956, as follows : Ring-necked, 3 green and 3 lutino ; Green-winged King, 2 ; Bauer's, 11 ; Rock Peckers, 2 ; Stanley, 4 ; Maroon coloured, 4 ; Red-rumped, 10 normal and 4 yellow (2 male and 2 female) ; Splendid, 8 ; Bourke, 10 ; Masked Lovebird, 3 normal and 4 blue ; Fischer's, 4 ; and Peach-faced, 6.

* * *

C. af Enehjelm, Helsingfors, writes : " Last year I was tolerably successful with my small birds, breeding Gouldian, Parson, Long-tailed and Masked Grassfinches, Star, Bichenow's, and Peter's."

Spotted Waxbill, to mention some. I bred seven Three-coloured Parrot Finches, but no Red-headed. I also twice had young of the Indian Yellow Bunting (*E. bruniceps*), but they were only reared for about ten days."

* * *

Paul E. Schneider, San Gabriel, California, records the breeding of his Roseate Cockatoos. Four eggs were laid and all hatched; one young one died after about ten days. The other three left the nest on 12th, 14th, and 16th May. The parents then went to nest a second time; three eggs, two hatched; one young one died after a few days, but the survivor left the nest on 9th August. All four young were successfully reared.

* * *

Breeding results, 1956. Dr. J. Dalborg-Johansen, Odense, Lineolated Parrakeet. Major V. Dilwyn Jones, five Black-headed Conures, one died when a few months old; one Jendaya Conure that died during the bad weather at Christmas; ten Cockatiels; three Ring-necks; and a number of Masked and Fischer's Lovebirds. Kenneth Greenway, eleven Redrumps from two pairs; twenty-one Fischer's from two pairs, and fourteen Masked Lovebirds from three pairs. R. G. Kirkham, Peach-faced Lovebird, many, "I'll soon be up to my knees in them!" Charles Lucas, Burwood, Victoria, two Princess of Wales's, three Turquoisines, and half a dozen Bourkes. J. P. Newell, Athlone, Eire, a nest of four grey Java Sparrows reared. J. H. Reay, two Rock Peblers left the nest, one was, unfortunately, lost after it had been self-supporting for some weeks—its loss was due to a severe storm, the other turned out to be a female; one male Many-coloured; two pairs of Bourkes reared nine good young ones. Brian Turner, Virginian Cardinal, two young left the nest prematurely; one died and the survivor was caged with its parents; an attempt to hand-feed failed. Carleton F. Smith, San Gabriel, California, two Bleeding-heart Pigeons. San Francisco Zoo, two Stanley Cranes, the first Cranes to be hatched there.

* * *

L. Raymaekers, Brussels, 1956 results. A pair of Crimson-wings hatched two young which were given to a pair of Queen Alexandra's with two young of their own. One Crimson-winged died a couple of days later, but the other was successfully reared along with the two Queen Alexandra's. The hen Crimson-winged laid a second clutch of three eggs; the single young hatched was reared by its parents. Many-coloured abandoned five eggs after fifteen days. They were given to a pair of Bourkes; one was hatched and reared in company with three young Bourkes. Splendid, two females reared. Bourkes, 1st pair, three and the Many-coloured, and four in a second nest; 2nd pair, reared seven in two nests; 3rd pair, reared three.

Turquoise, one male reared. Queen Alexandra's, two reared with the young Crimson-winged, two reared in a second nest ; a second pair reared one. Pennant's, four hatched, three reared. Yellow bellied, a nest of six reared, two males and four females. Golden mantled Rosella, reared six in the first nest and five of seven hatched in a second. Lutino Ring-necked, two reared. King, four eggs laid on floor of the shelter, incubated but all infertile.

A. A. P.

REVIEWS

BIRDS OF SAURASHTRA, INDIA. By R. S. DHARMAKUMARSINHJI F.Z.S., M.B.O.U. Published by R. S. Dharmakumarsinhji at Dabhar, Bhavnagar, Saurashtra, India. 1955. Price £5 18s. 6d.

The author is a well-known ornithologist who first started his interest in birds while at his preparatory school in England. This book is the result of more than fifteen years' study of the birds of Saurashtra, the country lying on the west coast of India between the smaller projection of Kutch and the straight line of the Gujerat coast. The author states that most of Saurashtra is hilly, but that there is every variety of terrain including desolate salt plains, flat land growing wheat and millet, open grass, and wooded hills. He adds that many of the birds found in Saurashtra are also found in Kutch, Gujerat, and South Rajasthan, so these areas have also been covered in the book and a special supplement has been added of notes on birds so far not recorded in Saurashtra but found in Kutch and Gujerat.

The first chapter is devoted to sections on migration, local migrations, the study of migration, migration routes, how birds travel, colour as a factor affecting migratory birds, rain as affecting migration and breeding, and sudden influxes of birds. The author says that nowhere does rain play such an important part in local movements of birds as in India and refers to the hordes of birds he has seen appearing at the time of the monsoon, which not only brings birds with it, but acts as a breeding stimulus. Also in the first chapter are sections on bright plumage and bird song, how to study birds in the field and, finally, bird areas in Saurashtra. The author considers the Gir Forest and the Girnar mountain as the best area for resident birds and points out that though most people know the Gir Forest as the habitat of the Indian lion, few know it as a bird sanctuary. He also stresses the importance of the entire Saurashtra coastline and of the Bhal district as the main migratory routes. In the second and third chapters, on a seaside scene

on a February morning and an April day in the Gir Forest, the author makes his readers share his obvious pleasure and delight in the scenery by graphic descriptions of the surroundings and the birds.

There then follow full descriptions giving details, identification, notes, distribution, nesting, and food of 357 species. The author is a keen falconer and introduces an interesting innovation by trying to convey, in his notes on the flights of trained falcons, how birds react to attacks from birds of prey and how they escape. There are 33 colour plates depicting 282 species by Somalal Shah, 40 black and white plates from photographs by the author and others, a colour photograph frontispiece by the author, and 16 maps showing distribution and migration routes of various species. At the beginning of the book is a detailed map of the area under review and at the end a map showing the lakes of Saurashtra.

P. B-S.

A POPULATION STUDY OF PENGUINS. By L. E. RICHDALE.

Oxford University Press, London, 1957. Price 42s. net.

The author has made an elaborate study of the Yellow-eyed Penguin, *Megadyptes antipodes*, in southern New Zealand, extending over eighteen years. An earlier monograph dealt with *Sexual Behaviour in Penguins*, and the present work is concerned mainly with detailed observations in various breeding areas within about twenty miles of Dunedin. Four areas were worked thoroughly each season, and it is considered that practically all the breeding birds were found each season, and for some years nearly all resident non-breeding birds.

The data are presented in a series of tables dealing with first the length of the pair-bond and such factors as divorce, separation, disappearance and death leading to its dissolution. The incubation period seems to vary not only among individuals but between seasons. The chick period lasts on the average about 106 days. The amount of food received by chicks was determined by weighing the chicks four times a day. An average of 818 grammes of food per day was given to two chicks in the last eighteen days of the guard stage, but on one day the total reached 1,418 grammes. The young birds wandered considerably during the first five years, but then they became mature and rarely moved to a new breeding place. Out of 11 fledglings which entered the sea, 6 per cent returned to breed in their place of hatching, 8 per cent to the same area, 9 per cent to the nearest breeding area, and 7 per cent to a more distant area.

About 52 per cent are estimated to die, leaving a balance of 18 per cent which may breed in areas to the south of Otago Peninsula. Survival and mortality factors are given in detail, and the precise composition of a penguin community. There is also a chapter on the moulting season including comparisons with other species of penguins.

It was essential for these studies to have some system of marking and an aluminium band fixed on the tarsus was the method generally adopted. The numbers were stamped on the band in four places, so that whichever way the bird was standing the number could be seen and read by the aid of a telescope. Footmarking involving the punching of six holes in the web of each foot proved much more satisfactory, and according to the author, without it the material for this monograph would never have been obtained.

Whilst this is primarily a book for the specialist, the detailed study of such an interesting bird will appeal to a much wider public.

E. H.

* * *

NOTES

RED-EARED WAXBILL—CORRECTION REGARDING SPECIFIC NAME

In my note on "A natural colour variety of the Red-eared Waxbill" published in the November–December number, 1956, of the AVICULTURAL MAGAZINE, I referred to the Red-eared Waxbill as *Estrilda astrild*. The specific name I gave is not, however, correct, and should have read *Estrilda troglodytes*.

C. J. O. HARRISON.

CORRESPONDENCE

REQUEST FOR OBSERVATIONS ON BIRDS WITH DEFORMED BILLS

I am collecting information about birds with deformed bills and I think possible that some of your members might be able to help me. I should be interested to hear of any cases of birds with bills which are deformed in any way, the relevant point being:—

- (a) The type of bird ;
- (b) Full details of the deformity (drawings or photographs would be particularly helpful) ;
- (c) Any effect the deformity had on the feeding or other habits of the bird ;
- (d) Whether the deformity was permanent or only lasted for a certain time and
- (e) Cause of death, if known.

It is possible that such deformities may be inherited in some cases and as evidence of this from breeding—either in support or in opposition to this view—would be valuable.

I should be very grateful for any information of this sort sent to me.

D. E. POMEROY.

SIDNEY SUSSEX COLLEGE,
CAMBRIDGE.

FRENCH MOULT RESEARCH

The National Council of Aviculture is sponsoring a three-year programme of research into the cause of French Moults in Budgerigars, to be undertaken in the Department of Agricultural Chemistry in the University of Reading. There is some evidence that French Moults may, in certain cases, be associated with a quantitative or qualitative deficiency in the crop-milk fed to the young chicks, and, as part of this investigation, we are studying the structure, development, and possible endocrine control of the glands responsible for the production of this secretion.

A condition similar to French Moults has also been observed in some species of lovebirds and in Red-rumps, and there is good reason to believe that all parrot-like birds feed their young on crop-milk for at least the first week after hatching. We are interested, therefore, in studying the structure of the milk-secreting glands in other psittacine birds as well as in Budgerigars, and if any members of the Avicultural Society are unfortunate enough to lose any of their birds while incubating or while feeding young, we should be very glad if they would send the carcasses to us, with the date on which the first egg was laid, the date of death, and whether or not young had hatched.

It is not known whether the cock produces crop-milk as well as the hen, so birds of both sexes would be equally welcome. It is important that they should be sent as soon after death as possible, and if any substantial delay occurs, it would be very desirable if they were preserved in 5 per cent formalin, or failing this, in 50 per cent methylated spirits. A small cut should be made in the body wall of the thorax and abdomen to allow the preservative to enter and, after soaking in the liquid for a few hours, the bird may be removed and packed in damp paper in a polythene bag for postage.

The bodies of any young parrot-like birds which die while in the nest would also be of great value for chemical investigation of their crop-contents.

We are hoping that this investigation will make a real contribution to the knowledge of the physiology and nutrition of psittacine birds, and any help which members are able to give will be greatly appreciated.

All specimens should be posted to me at the University.

T. G. TAYLOR.

DEPT. OF AGRICULTURAL CHEMISTRY,
THE UNIVERSITY, READING.

BREEDING THE BLACK-BREASTED PLOVER

After reading in the December number of our Magazine Mr. Gerrits very interesting account of the breeding of the Australian Black-breasted Plover *Zonifer tricolor*, I would like to supplement his remarks by saying that after keeping two or three pairs in the Lilford aviaries for some years, we found them charming subjects to possess and considerably less difficult to maintain in health than some of the rarer British waders. Our examples did well when kept in a large pool aviary with other waders. They partook of the usual waders' mixture and would also eat wheat. I have no reliable history of the species available, but should imagine they may frequent dry upland pasture. Mention may be made of this because when purchased I found them in a London store (Messrs. Chapmans) in excellent condition, but supplied with no other food except a dish of dry, small, brownish-yellow millet seed. Unsuitable as this appeared to me they were partaking of it freely and I was assured later that it was the only food that had accompanied them on the voyage.

As to the breeding of the Black-breasted Plover in confinement I may add that as the spring approached, paired pairs were better removed to quieter quarters. Therefore our most promising pair were summered in a small aviary the whole floor space of which consisted of a well kept miniature lawn 12 feet by 14 feet. Here, as described by Mr. Gerrits, they made a beautiful rubbing or nest in the short turf and for two seasons around 1930 reared their young, I believe a two and a three. From memory these birds were very noisy and demonstrative at the nest but never seemed really to mind their aviary being entered for supplying food. When the young were newly hatched, however, it was advisable to note the exact position of each squatting chick before stepping inside.

My diary of 1930-31 states the young were quite easy to rear.

LILFORD, OUNDLE, PETERBOROUGH.

A. F. MOODY.

THE AVICULTURAL SOCIETY RECEIPTS AND PAYMENTS ACCOUNT

Year ended 31st December. 1956.

RECEIPTS				PAYMENTS			
	£	s.	d.		£	s.	d.
To Balance at Bank, 1st January, 1956				By Printing of Magazine			1,162 17 1
" Ordinary subscriptions				" Coloured plates			198 11 10
Arrears	8	5	0	" Authors' separates			19 2 6
Current	973	17	5	" Translation fees			6 10 0
In advance	169	18	8	" Printing <i>Grebes</i>			81 4 6
				" Sundry printing and stationery			59 14 8
Life membership subscriptions				" Printer's charges and expenses			17 18 6
" Avicultural Society of America				" Honorarium to Editor			100 0 0
" Donations				" Secretarial			52 0 0
" Sales of Magazines				" Preparation of Index			10 10 0
" Sales of <i>Australian Parrots</i>				" Newman Library insurance			2 5 0
" Sales of <i>The Anatinae</i>				" Advertisements and publicity			29 12 11
" Sales of <i>Grebes</i>				" Expenses at Council Meetings			5 5 0
" Sales of surplus books				" Medals and engraving			9 2 9
" Sales of waterfowl rings				" Waterfowl rings			5 5 0
" Sales of coloured plates				" Postages			34 14 10
" Sales of reprints				" Bank charges			8 4 4
" Advertisements				" Miscellaneous expenditure			9 8 0
" Dividends							
				" Balance at Bank, 31st December, 1956			1,804 10 11
							558 15 9
							<u>£2,363 6 8</u>

I have examined the above Account with the books and vouchers of the Society and certify it to be in accordance therewith. I have verified the Bank Balance.

LONDON.
18th February, 1957.

J. WATKIN RICHARDS, } Hon. Auditor.
Certified Accountant.

- L. SCHOTHORST, Verl. Hoofdstraat 29, Hoogezand, Holland. Proposed by Miss K. Bonner.
- A. SCHUH, 648 Houston Avenue, Port Arthur, Texas, U.S.A. Proposed by A. A. Prestwich.
- GEORGE W. SHAW, 1431 S. Oak Cliff Blvd., Dallas, Texas, U.S.A. Proposed by Miss K. Bonner.
- J. B. SHULER, Jr., 43 Kirkwood Lane, Greenville, S.C., U.S.A. Proposed by A. A. Prestwich.
- ROGER F. SOHNER, P.O. Box 206, San Anselmo, Calif., U.S.A. Proposed by Miss K. Bonner.
- AMEDEO SOVERA, Hotel Mare Pineta, Cervia (Ravenna), Italy. Proposed by Miss K. Bonner.
- PHON STOWERS, Housemaster, Cory House, Wallingford Farm Training School, Benson, Oxon. Proposed by A. A. Prestwich.
- A. RYDER TONNESEN, 4 Norddalsvej, Holte, Denmark. Proposed by A. A. Prestwich.
- G. TOUCHARD, 19 Rue du Fort-Louis, Dunkerque, France. Proposed by A. A. Prestwich.
- L. D. TUTTLE, 9814 Crestline Street, Dallas, Texas, U.S.A. Proposed by Miss K. Bonner.
- H. H. TYLER, 74 Ditmas Avenue, Kempton, Beds. Proposed by Miss K. Bonner.
- OTIS WADE, 1806 Redesdale Avenue, Los Angeles 26, Calif., U.S.A. Proposed by A. A. Prestwich.
- Mrs. CATHERINE WAGNER, 18142 Archwood Dr., Reseda, Calif., U.S.A. Proposed by Miss K. Bonner.
- B. L. WARD, Washway Road, Holbeach, nr. Spalding, Lincs. Proposed by R. T. Kyme.
- Dr. FREDERICK S. WARFORD, Rm. 1512, 490 Post Street, San Francisco 2, Calif., U.S.A. Proposed by Miss K. Bonner.
- A. WHITE, "Aldoran," 9 Heath Road South, Runcorn, Cheshire. Proposed by W. B. Frostick.
- PETER O. WILLIAMS, "Northfield," Sherborne, Cheltenham, Glos. Proposed by K. W. Greenway.
- L. A. WOODS, 56 Evans Street, Moonee Ponds, Victoria, Australia. Proposed by Miss K. Bonner.
- KENNETH A. WYATT, 3306 Newton Street, Torrance, Calif., U.S.A. Proposed by Miss K. Bonner.
- LOUISE W. YOUNKIN, Jr., 2515 West 117th Street, Inglewood 4, Calif., U.S.A. Proposed by A. A. Prestwich.
- PAUL E. ZILLESSEN, Cedar Hill Road, Spring House, Penna, U.S.A. Proposed by Miss K. Bonner.

NEW MEMBERS

The forty-two Candidates for Election in the January-February, 1957, number of the AVICULTURAL MAGAZINE were duly elected members of the Society.

READMITTED

LAWRENCE N. TAYLOR, Shadowhurst Farm, Glen Moore, Penna, U.S.A.

CHANGES OF ADDRESS

- GEOFFREY BANKS, to Potters Wood, Sutton Road, Aldridge, Staffs.
- JAMES M. HARTSHORNE, to 108 Kay Street, Ithaca, New York, U.S.A.
- The Rev. B. C. R. HENRY, to B.M.S. Station, Udayagiri, Ganjam District, Orissa State, India.
- E. J. T. HOUSDEN, to Senanga, Barotseland Protectorate, Northern Rhodesia.
- Dr. LESLIE HOUSDEN, to Roundhead Cottage, Old Basing, Basingstoke, Hants.
- F. INGLIS, to The Vale Hotel, Alford, Aberdeenshire.
- ARTHUR J. KLENK, to Doolette Road, Spearwood, West Australia.
- K. J. LAWRENCE, to 65 St. Mary's Road, Kelvedon, nr. Colchester, Essex.
- C. OLIVER, to 53 Dollis Road, Finchley, N. 3.
- NOLAN PIGG, to 3707 Jackson Street, Bellwood, Ill., U.S.A.
- RONALD STEVENS, to Fermoye Lodge, Costelloe, Co. Galway, Eire.
- Mrs. C. H. WAKEFIELD, to 1437 Alameda de las Pulgas, Redwood City, Calif., U.S.A.
- C. WHITE, to 137 So. Carolina Dr., El Paso, Texas, U.S.A.
- W. A. WINGATE, to 46 Jewry Street, Winchester, Hants.

DONATIONS

(Coloured Plate Fund)

	£	s.	d.
LORD GERARD	5	0	0
Mrs. J. DALZIEL BIRRELL	1	0	0
F. E. B. JOHNSON	15	0	

UNIDENTIFIED MONEY ORDERS

Will the senders of the following Money Orders please notify the Hon. Treasurer, so that receipts may be sent to them.

Belgium.

Nivelles, No. 15.

Forest (Brux) 3, No. 30.

Holland.

Eindhoven, No. 232.

U.S.A.

Los Angeles, No. 12,917,896.

MEMBERS' ADVERTISEMENTS

The charge for Members' advertisements is ONE PENNY PER WORD. Payment must accompany the advertisement, which must be sent on or before the 15th of the month to A. A. PRESTWICK, 61 CHASE ROAD, OAKWOOD, N. 14. All members of the Society are entitled to use this column but the Council reserves the right to refuse any advertisements they consider unsuitable.

WANTED

Barnard's Parrakeet hen.—H. PEARL, Lords Bridge, Halton, Cambs.

Notes on the Management of Ornamental Waterfowl in Confinement, by Hugh Wormald even if not in mint condition.—J. E. HARRIS, Wood Lawn, Uttoxeter, Staffs.

G. M. Mathews, *Birds and Books*; Cassino's *Naturalists' Directory*; Willia Swainson, *Taxidermy*.—HON. SECRETARY, 61 Chase Road, Oakwood, N. 14.

Pair Northern Bullfinches (*Pyrrhula p. pyrrhula*); female Lesser Canada Goose. H. MOODY, Lilford, Oundle, Peterborough.

Temminck's Tragopan, male; Leadbeater's Cockatoo, female; Lutino Ringneck male; Pileated Parrakeet, female.—J. BRUYNEEL, Domaine de Steynockerze Régie, Belgium.

FOR SALE

Pair young Swinhoe's Pheasants (American stock), £9 10s. *Systema Avium Rossicarum* (Birds of the U.S.S.R.), vol. 1, in French, coloured plates; foreword by Jean Delacour, £1.—SYDNEY PORTER, 149 Stenson Road, Derby.

WATERFOWL RINGS

Members are reminded that the Society's special blue rings are always available. All Waterfowl in collections, both public and private, should carry them.

Size.		Price per dozen, post free.	
		s.	d.
2-3	Teal	3	3
3	Wigeon	3	6
4	Mallard, Pintail, etc.	3	9
4-5	Smaller geese	4	6
5	Greylag	5	3

Requests for rings should be addressed to the Hon. Secretary, Avicultural Society, c/o Zoological Society of London, Regent's Park, London, N.W. 1, from whom particulars can be obtained.

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Nat. Hist.

AVICULTURAL MAGAZINE

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THE AVICULTURAL SOCIETY

Founded 1894

President : D. Seth-Smith, Esq.

**Hon. Secretary and Treasurer : A. A. Prestwich, 61 Chase Road
Oakwood, London, N. 14.**

Assistant Secretary : Miss Kay Bonner.

Membership Subscription is £1 per annum, due on 1st January each year, and payable in advance. Life Membership £15. Subscriptions, Changes of Address, Names of Candidates for Membership, etc., should be sent to the Hon. Secretary.

THE AVICULTURAL SOCIETY OF AMERICA

Hon. President : Mr. Jean Delacour.

President : Mr. Don Rowland.

**Secretary : Mr. Otis Wade, 1806 Redesdale Avenue, Los Angeles 26, Calif
U.S.A.**

The annual dues of the Society are \$2.50 per year, payable in advance. The Society year begins 1st January, but new members may be admitted at any time. Members receive a monthly bulletin. Correspondence regarding membership, etc. should be directed to the Secretary.

THE AVICULTURAL MAGAZINE

The Magazine is published bi-monthly, and sent free to all members of the Avicultural Society. Members joining at any time during the year are entitled to the back numbers for the current year on the payment of subscription. All matter for publication in the Magazine should be addressed to :—

**The Editor : Miss Phyllis Barclay-Smith, 51 Warwick Avenue, London
W. 9. Telephone : Cunningham 3006.**

The price of the Magazine to non-members is 5s., post free, per copy, or £1 10s. for the year. Orders for the Magazine, extra copies and back numbers (from 1911) should be sent to the publishers, Stephen Austin & Sons, Ltd., Caxton Hill, Watlington Road, Hertford, England. Telephone : Hertford 2352/3/4.



WEDGE-TAILED SUNBIRDS.

AVICULTURAL MAGAZINE

THE JOURNAL OF THE AVICULTURAL SOCIETY
AND THE AVICULTURAL SOCIETY OF AMERICA

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MAY-JUNE, 1957

THE WEDGE-TAILED SUNBIRD

(*Anthobaphes violacea*)

By J. J. YEALLAND (London, England)

The Wedge-tailed or Orange-breasted Sunbird was originally described in 1766 by Linnaeus when he named it *Certhia violacea*. It is the only member of its genus and its distribution is confined to the extreme south-west of Africa.

Stark (*Fauna of South Africa, Birds*, vol. 1) says : "The Orange-breasted Sunbird frequents open uncultivated country, rough hill-sides, and the slopes and summits of mountain ranges, and especially where various heaths and proteas abound. It has a considerable vertical range, from sea-level to a height of 4,000 feet or more, and being a hardy little bird, seemingly indifferent to cold and wet, it is quite at home on the bleak and foggy mountains of the coast ranges in Cape Colony."

Stark goes on to say : "These Sunbirds feed largely on the nectar of various heaths, occasionally on that of proteas, also on small insects that frequent these flowers, and on gnats and flies which they dart upon, like Flycatchers, from a perch to which they constantly return. Like the Long-tailed Cape Sugar Birds, they breed during the winter rains, the nests near Cape Town being usually built in June and the eggs laid in July. This coincides with the flowering season of certain heaths and proteas on whose nectar they feed their young. On one occasion I found a nearly completed nest at the end of March. The nest, oval and domed, with a small side entrance near the top, is built of small flexible twigs of heath, dry grass, and narrow downy leaves, thickly lined with the soft white petals of a protea. It is not pendant like the nests of other Sunbirds, but is attached by its sides to the stalks in the centre of a thick bush of heath, a foot or eighteen inches off the ground. The eggs, two in number, are white dotted all over, but most thickly round the greatest diameter, with small spots and streaks

of greyish brown. They measure 0.65×0.48 . On one occasion I noticed a female remove the eggs from a nest from which I had startled her, and place them under some thick undergrowth a few feet away. She apparently carried them in her bill. A second brood is frequently reared in September and October. From December to March these Sunbirds are generally in small family parties of four or six, the parents and their young, one of the band being nearly always a male in full plumage, while one or two are young males showing varying amounts of metallic plumage."

The flocking habit is interesting: this Sunbird certainly seems less aggressive than many others. No doubt it would thrive—as indeed do many of the more tropical ones—far better in an outdoor aviary than in a cage and would need only a little warmth in the shelter during winter. I once kept a pair in a large cage under quite cool conditions and they did well, but then the following summer when I was away, both escaped and were not heard of again.

* * *

BREEDING GOLDEN-MANTLED ROSELLAS SINCE 1951

By DIETER OVERLÄNDER (Honnef/Rhein, Germany)

When I write "Golden-mantled" I do not intend to say that my Rosellas are pure Golden-mantled but they look like them. I believe that in Germany many, or most, of the birds so called are hybrids or youngsters of hybrids, between *cecilae* and *eximius*. These "hybrids" in many cases look like *cecilae* so far as the colour is concerned, but in size they seem to favour the larger *eximius*. But this is only an idea of mine and not proved.

I hope the reader will not be disappointed that this breeding account is not a story of splendid successes.

In 1951 I obtained my first pair of Rosellas, an old cock and a young hen still in immature plumage. In the middle of April, 1952 the cock drove the hen through the aviary, but as this aviary is 12 m in length he could not harm her. Then I realized that she was too young and exchanged her for another belonging to my uncle. This hen after being in the aviary for only eight days was fed by the cock and ten days later she laid her first egg. Unfortunately, this first clutch, five eggs, was destroyed after two youngsters had hatched because the log fell to the ground. The parents stopped breeding for six weeks and then they had another clutch of three eggs, which all hatched and were reared. But misfortune had not ceased as in winter the old hen escaped. Some months later I was told that she had been caught, fed on poultry food, and then escaped again.

In 1953 I obtained another hen from a first nest of 1952. This hen, though still in immature plumage, had four eggs in one nest, three of which hatched and were reared. Two other young pairs, two birds of which had been bred by myself, were doing nothing but feeding occasionally and inspecting the nests. I suppose it is not so difficult to breed from young hens as from young males.

In 1954 I had three pairs in full adult plumage and one young pair. I hoped to realize good results. The old pair had six eggs all of which hatched. The nestlings did well for a fortnight after emerging from the shell, then the eldest fell ill. The down was wet and stuck to the body. Every second or third day I found another dead young one. I believe they all died from cold and wet weather.

The other pair had a clutch of seven eggs. When laying the fourth the hen became egg-bound. She had left the nest and sat on the ground. I took the bird indoors and tried to massage the egg out of the body. I took her in my left hand and with three fingers of the right hand I pressed the egg out. But there are two points which must be observed. You must not try to do things too quickly and must watch the bird and feel or see when the hen herself is straining to get rid of the egg and just at that moment you must help her. Then sometimes the egg must be moistened, especially when it is visible. Naturally, this way of curing is only possible when the bird is in good condition and when the egg-binding is not caused pathologically. In this way I have been successful three times. I suppose that the birds got egg-bound because the temperature had fallen rapidly. I think, however, that one can very often prevent it by feeding cod-liver oil. Thus in 1954 my Rosellas had twenty-eight eggs and reared only two young.

1955 was another poor season. When three young of my old pair had died I took the remaining two and reared them by hand. They were fed on milled sunflower seed, oats, and millet. Some greens and carrots were added and the food was moistened and warmed. The two youngsters did very well and turned out to be a pair. The male escaped, when I did not think he was yet able to fly; but the next day he returned and I was able to catch him. He is still in my possession, and when I enter his aviary he takes sunflower seeds from my hand and sits on my shoulder. Two other young Rosellas I had taken out of their nest some weeks later. These birds were fed for some time on hulled millet, used for human consumption. Probably some vitamins were missing in this food and, though I added greens and carrots every day, the plumage developed very badly. They could not fly till they were eight months old.

Last year (April, 1956) there were three pairs of Rosellas on eggs and I hoped that we would have a good season. But I believe that this hope is a characteristic feature of every bird-lover all over the world.

HUMMING BIRDS

By Professor J. BERLIOZ (Paris, France)

(Address given to the British Aviculturists' Club, 13th March, 1957.)

Among the numerous groups of perching birds, the Humming Birds, which constitute the family Trochilidae, are, with the Trogons certainly the best defined and most isolated of all, really showing no connecting link with any other type. Nothing is known about their ancestors and even their actual affinities remain quite obscure, although they are most generally considered by modern systematians to be more or less closely allied to the Swifts.

The chief characters are as follows :—

Mostly of very diminutive size (the largest like a Swift, the smallest like a bumble-bee).

Bill, very thin, elongated, tubular, pointed, either straight or curved downwards or, sometimes, upwards.

Peculiar tongue, long, protractile, bitubular at the end, and attached to a curious bony formation encircling the skull, not unlike that of the Woodpeckers.

Extreme shortness of the wings and legs, more reduced than in any other type of birds. The wings always have ten primaries, but not more than five or six secondaries. The feet, also very short, always have four toes, often with strong claws.

Brilliance of the plumage, mostly composed of scale-like feathers, the tail always composed of ten rectrices, very seldom less. The shiny appearance of the plumage is due to the physical structure of the feathers, which produces various shades of iridescent colouring unrivalled by other birds, but always devoid of any pigment except black or rufous. Males and females are sometimes alike, but generally differ in various ways ; however, sometimes they are quite dissimilar in pattern and colouring.

They are very active, often aggressive and pugnacious little birds fighting among themselves and even attacking much larger and stronger birds, such as birds of prey and Tyrant-Flycatchers, utilizing their wonderful power of flight and their very sharp acute bill. They have but few natural enemies : however, it is said that the smallest species, when hovering in front of flowers, may be caught and eaten by aerial predators, such as the Bemtevi Tyrant and even fall victim to the big American spiders.

Humming Birds are strictly confined to America, but here they are to be found everywhere where there are flowers. Although much more numerous in the tropical parts of America, some of them spread during the northern summer, as far north as Alaska and Labrador. Similarly, in the southern hemisphere, one species at least is to be found during the southern summer as far south as the Strait of Magellan.

The reason why the life of the Humming Birds seems so closely connected with the existence of flowers is because in flowers they find both food and drink. It has long been wrongly believed that their food was essentially composed of the sweet secretions of the flowers ; but it is now well known that animal food is much more necessary to them and in fact they feed chiefly on very small insects which are themselves attracted by the liquids inside the flowers. Humming Birds are perfectly able, too, to catch the flying insects on the wing, using their long protractile tongue for this purpose quite as cleverly as in picking them out from the flowers.

Even in some countries where flowers are scarce, as is the case in the Juan Fernandez Islands, Humming Birds remain almost strictly insectivorous. In other very dry parts of the American Pacific Coast, where there are only few soft insects, Humming Birds may in some way become more or less frugivorous, feeding mostly on the juice of damaged cactus fruits, when the latter have been attacked by ants or other animals.

Considering the wide variation of food these birds may adopt according to climatic conditions, it is less astonishing to find them so widely spread everywhere in America, from the low tropical rain-forests to the highest mountain ranges or in subdesert areas. Owing to their perpetual need of food they are particularly numerous in cultivated areas, where gardens and orchards provide all kinds of flowers and insects nearly the whole year round. For the same reason, the Humming Birds which nest in temperate countries are migratory and several species every year make very long voyages, starting from their breeding grounds in Canada and Alaska and reaching as far south as Central America and Panama, where they spend the autumn and winter months.

The peculiar structure of the wings affords the Humming Birds a most peculiar and unique mode of flight ; it consists in an uninterrupted sequence of very rapid wing-beats, the speed of which may attain 50 or more per second for the smaller species. The name "Humming Birds" is actually derived from this flight, which closely resembles the flight of certain moths and produces similarly characteristic sounds. Another peculiarity of their ability of flight is that they are the only birds which are able to fly backwards, which they can do at the same speed and quite as easily as in any other direction. But, on the other hand, they cannot use their feet for any motion at all when perching on a branch or sitting on the ground. They will be seen remaining nearly motionless on the same twig for several minutes, then they will suddenly fly away at an astonishing speed and, after acrobatic flights in the air, come back to the same place, just as flycatchers do.

Nearly all their food is obtained on the wing, both the small insects

captured in the air and the food sucked from the flowers. They hover rapidly at the same place in front of the flower and push in the long bill and protractile tongue to reach the nectar and insects inside. However, on a few occasions, and especially in the case of certain mountain species which are more sluggish in their habits, they perch close to the flower, taking their food from the latter just as most of the Passerine nectarivorous birds do.

Nesting habits : there is still much to be learned about their nesting habits. Until quite recently it has been accepted as a strict rule that Humming Birds are polygamous and that both sexes, except for the short period of mating, live quite independently apart from each other even during migration. Their nests are generally most delicate though solid, cup-shaped structures, attached to twigs or various other supports, and the building of which is done by the females alone. They almost invariably lay two eggs, the latter being uniformly white and comparatively large for the size of the bird. Females also undertake alone the entire incubation and the rearing of the chicks. These remain about twenty-four days in the nest, until their wings are completely grown, as they are unable to move until they acquire the same ability of flight as the parents.

However, some very recent observations made in Venezuela seem to prove that, at least in a few cases, the male does not remain quite so indifferent to the rearing of the young as is generally believed. These observations concern a somewhat large and common species of Humming Bird, *Colibri coruscans*. The observer (Dr. E. Schäfer) discovered a nest containing one young, newly hatched, and one egg, to which obviously male and female came alternately both to incubate the egg and to feed the young bird (although both sexes of this species are more or less similar in appearance, the male has an abnormal feather pattern which rendered him unmistakable).

It is impossible to ascertain whether the same habits are to be found in all individuals of the same species or not. But it may be recalled that there is a modern theory that among birds in which the two sexes are similar in appearance, both parents generally assume the same duties in the rearing of the young. And, on the other hand, it is a well-known fact now that in many so-called "polygamous" birds, individual cases of monogamy may exceptionally occur.

Finally some words may be added concerning Humming Birds in confinement. At least three conditions are necessary for their good health and maintenance : space for flying ; insects as their fundamental food ; water and moisture for most species.

For more than half a century efforts have been made to keep these beautiful tiny creatures in confinement. But after many failures it was not until some thirty years ago that these efforts became really successful. The long delay involved in bringing them from America

to Europe, the need of fresh food every day, the wrong idea that sweet liquids constituted their normal diet, have been the chief causes of so many failures, and, for the few specimens able to reach Europe at that time, they generally died suddenly after a few weeks at most. I remember in 1922 visiting one of the first attempts made in Paris to maintain a small collection of living Humming Birds in Count de Béguir's aviary. Each bird was kept alone in a special cage, and several times every day was given a few minutes of freedom in a very large room.

In more recent times great improvement has been achieved both in transportation and in giving the best conditions of life in confinement. There is no doubt that when still more has been learned about their life in the wild, it will become still less difficult; but it is certainly rather unlikely that they will ever become real "pets" for their owners.

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VISIT TO THE ZOOLOGICAL GARDENS, CHESTER

The Council of the North of England Zoological Society, through the Director-Secretary, Mr. G. S. Mottershead, kindly invite members of the Avicultural Society to lunch at the Zoological Gardens, Chester, on Tuesday, 25th June, 1957.

The invitation to lunch is *confined to members*. Free admission to the Zoo is offered to friends, and lunch may be reserved for them. Members intending to accept the invitation must notify the Hon. Secretary, 51 Chase Road, Oakwood, N. 14, before 18th June, 1957.

The Chester Zoo is 180 miles from London, 15 miles from Liverpool, 40 miles from Manchester, and 72 miles from Birmingham.

Suggested trains (subject to confirmation) from and to London are :—

Leave Euston, 8.30 a.m.	Arrive Chester, 12.24 p.m.
Leave Chester, 5.10 p.m.	Arrive Euston, 8.50 p.m.

Fares (subject to revision) return, 1st class, £4 4s. 10d.; 2nd class, £2 16s. 6d.

There are excellent bus services from Chester Market Square, Service No. 13, to within 150 yards of the main entrance to the Zoo, and a regular direct Zoo service to the north entrance; also a direct service from "Woodside", Birkenhead, to the north entrance.

Visitors arriving by train will have to proceed by bus to the Market Square in order to catch a bus to the Zoo. If members arriving by the London train would kindly advise the Hon. Secretary, arrangements could be made for them to be conveyed direct to the Zoo from the station.

ADVENTURES WITH SOFTBILLS

By J. R. VAN OOSTEN (San Marino, California, U.S.A.)

(Continued from page 50)

During the month of January, 1956, I was very fortunate in being able to purchase from Professor Carl Naether a beautiful pair of Black-chinned Yuhinas in excellent condition. I already had one hen which had been imported a few years ago from India. In the same shipment I received a Golden-eyed Babbler and the two arrived as good friends and have remained so. It was a funny sight to see the Yuhina follow the Babbler, about twice her size, everywhere it went. Never having seen any of these Babblers I was unable to sex mine but I am sure that it is a male as it sings all the time. The new pair of Yuhinas were liberated after four days in a holding cage to allow the other birds in the aviary to get used to them. My greatest fear was that the cock might kill the odd hen, but upon being released the pair paid no heed to her. Therefore I left her in, a thing which I now have very much regret.

Sexing these little birds I find fairly easy as there is a difference of colour on the breast of the hens. The colour throughout is uniform in both the male and the female with only that one exception. Their breast feathers are almost a fawn grey, the male's being dark grey. Also I found that the male is somewhat larger than the two hens. This I noticed when I bought the pair, but with the three of them it is quite unmistakable. Both sexes have a little song, but the male's lasts longer and is uttered more often and is a little deeper in tone. One of their characteristics is when they are apart they call to each other in a short one-note call, which increases if something is found; where upon the other one comes at once. They are extremely inquisitive and spent the first few weeks exploring all the corners of the "glass house" and adjoining flight. They also spend a great deal of time hawking fruit-flies, and with each fly caught one hears the snap which most Flycatchers make. This sound also reminds one of the snap which Manakins make. One day while visiting Mr. Isenberg I heard his Black and White Manakin make the same snapping noise but I believe that Manakins make this noise when not hawking insects.

In March the pair was observed inspecting the nest-boxes and finally they settled on a small finch nest-box which had a platform in front. The materials they used were string, cotton, pieces of burlap, small twigs, dog hair, with a lining of bird feathers, string, and dog hair. Being drafted into the military service at the end of March I was unable to keep any notes of what happened during the following two months. Upon my return in June I at once noticed that my Yuhina

now totalled five instead of three. No doubt the success can be once again attributed to the fruit-flies as there was always an ample supply to be had. I feel strongly that with cultures of these flies, two or three to an aviary when young are in the nest, plus a few mealworms, and where possible other live food, it would not be impossible to rear many more of the baby softbills to maturity. The young were decidedly on their own because when they begged their parents for food and none was offered they flew to the feeding tray and proceeded to eat by themselves. They ate soaked currants, egg food, apple, grapes, and drank a little honey-water; also they were able to hawk flies, so they were definitely not dependent upon their parents.

I had noticed that since my leaving the male had become somewhat more aggressive and that should have been the sign for me to remove the three birds. However, as we often do, I left them in there and the day before I left to go back to the Navy after a fourteen-day leave I found three dead Yuhinas on the ground. The old hen was taken to the taxidermist as were the two young, but I had all the insides taken to a lab and as luck would have it the young were a male and female. There is no doubt the male Yuhina killed the other three but of this I cannot be sure. These graceful little birds are hard to come by here in the States and the loss was very saddening. If I should lose one of the pair, especially the hen, it would be a long time before I could replace it. However, if the success is repeated next year the young will be separated as soon as they are able to feed by themselves.

The young resembled the parents except for being lighter in colour throughout the body and their crests were not yet as black. The bill did not show the colour of the parents. When adult the lower mandible has a spot of red at the joint where the bill meets the body, their feet were also not as full of colour. Beyond this they resembled and possessed all the funny and comical antics and habits which one associates with this family.

Some other attempts were made but nothing came of them. This was the first year that I was able to rear any young ones. Softbills are very funny in this respect as sometimes they breed and other times they do not even make an honest effort. One pair of Pagoda Mynahs built a nest, but no eggs were laid and the nest was finally destroyed. A pair of Red-eared Bulbuls and a pair of Yellow-winged Bulbuls were seen carrying nesting materials but nothing came of it. All my White-eyes—two pairs of Indian, one pair of Australian (obtained from Mr. Isenberg), and a male Australian which mated with a female Indian—have never shown the slightest interest in breeding or even building a nest. Mr. Isenberg each year always rears a few and I believe this may be due to the large clumps of dwarf bamboo which he has in their aviary. The clump I have is not thick enough so this could very possibly be the reason why they have not shown the least interest.

The group of birds which fascinates me the most is the Tanager family. I find these birds full of antics besides being extremely colourful. I have at the present quite a few of these gems, but in all the time since beginning with softbills I have run across very few females. These birds should be easy to breed if one could find the hens. One pair I obtained a few years ago from Mr. William Krebs were sitting on a nest of two eggs, but as he did not want to bother with the young he broke up the nest and I took the birds. Both were in excellent condition, but after seven days the hen succumbed. For what reason I was unable to find out as the death report showed no signs of anything wrong. The pair were the lovely Golden-headed Tanager. The male passed on about six months ago and I have not been able to find another. At the same time I had one Yellow-headed Tanager which looks the exact duplicate of the Golden-headed in body, size, and distribution of the colours; the only difference, of course, was that they were not the same in colour, the former being gold on top and the sides of the head with a metallic green body and black wings back, and tail. The latter's head is yellow, body a metallic sky-blue wings, back, and tail black. Another very interesting one is the Blue-backed Tanager, which closely resembles and is related to Desmarest's Tanager. The difference is that the rump and front of the former is a metallic light royal blue instead of green, and the head is brick-red instead of scarlet. The little yellow band which separates the red of the head and the green of the back is not very noticeable in the Blue-backed. Also from Mr. Krebs I obtained a female Blue-crowned *Chlorophonia*, otherwise known as the Emerald Tanager. I had for years been worried about these birds, as I lost over ten after each had been in my collection for no more than two months. I finally decided to cut down on the banana and orange and that did the trick. By doing this I forced them to eat more egg food, which before they only pecked as if there was nothing else left. Now with the hen, I purchased from a dealer two young males which were coming into their adult moult; both did well and the three were together all the time. After about two years I found both the males in the pond and have no idea how they got there. Fortunately I still have the hen and a male will not be hard to procure. Also I have had pairs of the Violet *Euphonia* but was never able to keep them more than a year for the same reason as the above birds. I also have had females of the Blue, Copper-headed, Palm, Maroon, Blue-and-Black, Superb, and Pectoral *Euphonia*. Three of these I still have left to-day. Last year I was very lucky in importing eighteen of the beautiful Red-eared Tanagers from Ecuador. I have eight left after losing two and selling eight. Mr. Charles Cordier brought thirteen back with him some years ago and one of these came to the San Diego Zoo. This is where I first saw the bird and fell in love with it. This year my wish came true and not

only did I get some of these birds but amongst them were three hens. If I were an artist I would make a plate for the Magazine, as their beauty can only be appreciated if seen in life ; however, a description will have to do. To begin with we will imagine that the bird is jet black ; in size it is just a little bit smaller than the Mountain Tanager. Just behind the eye is a small crescent-shaped spot of scarlet-red, from which the bird derives its name ; in the female the shape of this crescent is smaller and not as bright. Then from just below the chest in a straight line across, through the belly and rump is the other area of scarlet-red, which again is several shades lighter in the hens. The bird also has a spot of blue at the first wing joint which shows while sitting still, but much better when flying. It is the same metallic light royal blue which the Mountain Tanager has on its wing ; also upon close inspection it will be noted that this spot of blue in the hens is not as large as that of the male. They were very nervous when they first arrived, but now have settled down and three of them will take mealworms from the hand. In the same shipment I received another Tanager which reminds one in size and shape of an Emerald Tanager only bigger. The colour is a very deep and bright royal blue all over, with the front, from the neck to the vent, canary yellow ; the wings and tail have a greenish sheen to them when the bird is sitting in the sun. I could find no description in *Aviculture*, Vol. I, to fit the bird, so I am not able to name it. I sold the bird to Mr. Jerome Buteyn and the last time I saw it it had fully feathered out and looked beautiful. I hope in future to have as many of the Tanager family as I can as they are very interesting and always full of life.

In the same shipment I received five other birds which I can find no description of in either the back issues of this Magazine or in *Aviculture*, Vol. I, or in any of the books which I have seen. These birds arrived two days before I went back to the Navy and unfortunately all I have left are the skins. I hope that as soon as I am back in civilian life I will again be able to procure some more of these birds.

The first bird was some type of giant Ant-Thrush or Ant-Pitta which belongs to the New World. Few of these birds have ever been imported because of the fact that they are hard to trap as well as hard to see in the jungle. Mr. Cordier imported some a few years ago, from, I believe, British Guiana, but these were smaller and, I remember, they were called Helmeted Ant-Thrushes. The bird that I had resembled in body that of a Pitta, only about three-quarters again as large, with a little longer tail. The head was similar and the beak was longer and musty black in colour, the feet were a dull flesh colour. The eye was light brown with a black iris. The head above the eyes, back, rump, and upper side of the tail was dark grey-blue ; the chin to the sides of the neck and three-quarters of an inch below the chin

was a light rusty or copper brown. The rest of the bird—chest, belly, vent, and underside of the tail—was the fawn colour of a fawn Zebra Finch. The chest, belly, and vent were also dotted with black spots each spot being one-quarter of an inch in diameter and surrounded by a ring an eighth of an inch wide, of the above-mentioned light rusty or copper brown. Each dot was roughly half an inch away from the next. The bird was quite tame, but when food was placed in the cage it would pounce on it like a dog. It would eat nothing but canned dog food, mealworms, cut up raw meat, some egg food, and a few raisins.

The next two birds were the same and in size resembled a Magpie Tanager, but with a more streamlined body. They looked like a member of the Tanager family but I could not tell for sure. The beak and feet were black and the eye was scarlet red with a black iris. This was the most outstanding feature of the bird. The top of the head was black with three red feathers which began at the crown and ran back to the back of the head; these the bird would raise a half an inch, along with the black feathers, when it became excited in any way. The rest of the plumage was a light blue-grey, more blue, which became almost black on the wings and tail. The birds were not nervous and they would eat anything put before them. They preferred soaked currants, egg food, grapes, and milk sop to anything else. I could not tell if they were young or not, but it seemed that there should have been a few more red feathers on the head instead of just the three. I should mention here that all five of these birds arrived in perfect condition without so much as a spoiled feather.

The last two were members of the Cotinga family, a cock and a hen. These birds are very rare and not easy to come by, not even in the jungle. This was my saddest loss, for there will be one chance in a hundred to replace them. The hen was an evergreen green with yellow feathers dotted over the lower chest and belly, and her beak and feet were a yellowish colour. In size she was a little larger than a Mountain Tanager. About six months before I had seen the same bird in a shipment which Mr. Ray Thomas received from Colombia and which now is in Mr. Jean Delacour's collection in Los Angeles. Upon looking through an old issue of the *American Aviculture* magazine I saw a coloured picture of a pair of Swallow Tanagers and the hen looked exactly like the two birds in every way. However, while visiting Mr. Delacour one day, and seeing the bird, I was informed that it was a hen Cotinga of some sort. The bird was in beautiful shape and seemed to be quite happy in its new surroundings. With this in mind the next bird which I shall describe could very well have been the male of the species, for it had all the characteristics of the Cotinga family. The size and shape of the body was very similar to that of a Naked-throated Bell Bird, though it was not so large. The beak and feet were

orange, like that of the bill of a Toucan, and the eye was orangeish with the black iris and a black eye cere. The whole head and neck were jet black, the back, wings, and upper side of the tail were a dark evergreen green, while the chest, belly, vent, rump, and under side of the tail a green colour like the breast of a Blue-throated Barbet, only a shade lighter. The belly, lower half of the chest, and vent were dotted with black dots which were surrounded by a very small ring of white. The dots were about half an inch apart and about three-eighths of an inch in diameter. The ring was roughly a sixteenth of an inch wide. Both birds were very quiet and were not easily disturbed upon someone entering the room ; they only moved to eat, drink, bathe, and preen themselves. They would take only egg food made into small balls, a few mealworms, small pieces of cut-up apple, pear, banana, and tomato, and catoniaster berries and grapes, which they liked the best.

Another shipment came to me in November, 1955, which contained three of the very rare and beautiful Apricot Cocks-of-the-Rock. These birds are larger than the Scarlet Cock-of-the-Rock, of which I have a male, but look the same in all respects except that the scarlet is replaced by a deep orange. Upon arrival two birds did not look to be in good shape. I stayed up two nights following, hand-feeding them, but on the third day one was lost. A week later one was sold after it looked to be in good condition, but it died within two weeks. The death report on both these birds showed that they had a disease in the intestinal tract which they had had for some time. The last one was liberated after two weeks in the "glass house", after the Scarlet had been transferred to the "medium size" aviary, and lived for another six weeks before it died. The bird was in perfect condition and seemed to be fine and healthy. As I was away at college I fear that the bird was not fed correctly, which caused its death. The death report stated that the lack of food had been the cause, and so, had the bird been fed correctly, it would have lived.

I have found that importing birds is not as expensive as one might think. I have also found that by shipping the birds in reinforced aluminium transport cages one cuts the air freight cost by half ; this is where most of the money goes when importing birds. I also have the transport cages made collapsible so that I can send them back to the collector for the next shipment. Being able to import, one is able to get some of the rarer birds plus the ones you can buy from your dealer. Of course you are going to have losses, but if the food and water vessels are hung properly and enough food is provided and fixed so that it cannot spill on the bottom of the cage, you will eliminate another cause of death. In this way I have cut my losses down fifty per cent of what they used to be. I would also like to add that I have imported the greater part of my collection as it would have been almost

impossible for me to purchase them here in the States. On the whole the members in England and Europe can obtain foreign softbills more easily than we can here in the States. No doubt the reason is that more people are interested in softbills over there than here, but I, like others, hope that some day people here will take more of a fancy to them. One reason for this lack of interest may be that it is imagined the cost of feeding this type of bird is an expensive affair, but I think that the following might change some minds.

Much has been written by various members of the Society on the feeding of softbills and therefore I would also like to throw my hat in the ring. There are many ways of feeding and each person has his or her own idea on what is the best. I have tried to feed my birds in such a manner as to keep them in excellent condition and yet not spend a fortune on them. At present the birds are being fed by our German cook and I must say she does a better job than I do. As has already been pointed out the only live food which is given are the fruit-flies, but during the winter months this is supplemented with mealworms. Also there are other insects which are available to them in the green moss around the waterfall, off plants, and from the ground. I might add that freshly cut grass is always given to them and they seem to enjoy poring over it in search of all sorts of things.

The mainstay of their feeding is a ready prepared Mockingbird food which I buy from a dealer. This is made of one-half Spratt's Mockingbird food and one-half finely ground enriched dog meal; to this is added equal amounts of cod liver oil and wheat germ oil to make it still fairly dry, but so that each ground is well soaked in oil. Then ten pounds of dried flies are added to a hundred pounds of mixture. To this I myself add one box of pabulum and one of wheat germ cereal to each ten pounds. This dries it up a bit more and adds a few more desirable ingredients. This is fed to all the birds and is also relished by doves, quail, cardinals, and Rainbow Buntings.

The next main item which I have found to be very good, and probably most responsible for keeping my birds in good health and excellent condition, is the egg food formula mixture which I have worked out. It consists of the following :—

6	(six)	tablespoons	of	Pabulum.
6	„	„	„	Wheat Germ.
1	(one)	„	„	Powdered Grade A Milk.
1	„	„	„	Horlick's Malted Milk.
1	„	„	„	Mellin's Food.
1	„	„	„	Powdered Carrot.
1	„	„	„	Fish Meal.
1	„	„	„	Meat Meal.
1	„	„	„	Bone Meal.
1	„	„	„	Powdered Sea Kelp.
1	„	„	„	Spratt's Red Colour Canary Food.

After thoroughly mixing all the above together, five grated hard-boiled eggs are added and mixed thoroughly with the mixture. The mixture will turn out crumbly in texture and will keep in glass jars for a week if kept in the ice box. My birds prefer this mixture to anything else I feed and nothing much else is touched until it is all gone. I feed it in very generous amounts to all my birds. The last two items, colour food and sea kelp, which contains iodine, are, I think, responsible for keeping the reds, yellows, and oranges from fading during the moult. This was especially noted in the Scarlet Cock-of-the-Rock, for after four moults his colour was the same as the day I got him. Then, while away, my father ran out of both the above and the bird moulted twice before I could obtain any more. Now that it is back on the mixture the bird seems to be regaining some of the scarlet and is redder now than he was last year at this time. The same thing held true for a male Red-rumped Tanager which never lost any of the brilliant red colour of his rump after five years in my collection.

Along with the two above items the following things are also fed. A jar of peanut butter, two jars each in the two larger aviaries, is kept in front of them at all times, also a bowl of sunflower seed and raw peanuts mixed together. Soaked currants and soaked raisins, for the larger birds, are given fresh daily, as is fruit. The small birds receive fresh honey-water daily and three times a week five drops of Zymadrops and ABCD drops are added. This gives the birds much of the vitamins and minerals which they do not get otherwise. Twice a week canned dog food, a brand with no gravy, is given to all the birds. Milk sop is fed once a week during the hot months and twice a week during the colder months of the year. It is made in the following way :—

- $\frac{1}{2}$ quart of Grade A Milk.
- 2 (two) tablespoons of Honey.
- 1 (one) ,, ,, Armour Beef Extract.
- 5 (five) drops of Zymadrops.
- 5 ,, ,, ,, ABCD drops.

This is then heated until thoroughly mixed, and cooled before being fed. Every other week they receive a bowl of cottage cheese, of which they are extremely fond. Occasionally they are also given cooked peas and diced beet and carrots.

During the various seasons of the year many wild berries are to be had and a bowl is always kept full in all the aviaries. The rest of their feeding consists of fruit. Being fortunate in having a little acreage and a good climate we are able to grow some fruit trees which produce enough for home consumption as well as for the birds. We have fig, avacado, persimmon, apricot, orange, plum, peach, and nectarine trees on the place. Apple, banana, and tomato is purchased the year around, and pear, grapes, melon, and cantaloup are purchased when in season. All the fruit is eaten by all the birds, but the inhabitants

of the "glass house" will not touch plums, peaches, nectarines, melons, or cantaloup. Once a week we purchase two lug crates from the market of apples, tomatoes, and bananas, and the other fruit mentioned above when in season. This costs us seventy-five cents a week. This fruit is not saleable to the public because it is somewhat damaged but for the birds it is perfect and I have never lost one bird because of bad fruit. The fruit is kept in a separate ice box in the garage and stays perfectly good for a week.

This then is the extent of what I feed my birds. I have a little over 200 softbills and the cost of feeding them ranges from ten to fourteen dollars a month, which I feel is very cheap.

I hope that this article will be of interest to the members and that more will write on the adventures of their birds. The keeping of birds is a greatly expanding hobby and pastime and the more interest the more we can learn. As for myself, as each day passes I find out something new in the habits of the birds or how better I may take care of them. It is up to each member to support the Magazine, for I am sure that each one of us has learned much by reading its pages.

* * *

BREEDING TANAGERS

By R. E. B. BROWN (Newcastle, N.S.W., Australia)

At the end of the war an absolute ban was imposed by the Veterinary Authority on the importation of all birds into Australia, for fear of the introduction of Fowl Pest, or Newcastle Disease. This is said to be widespread in the world, but has never occurred in Australia. The ban, coming when it did, at the end of the war, found our aviaries much depleted with regard to foreign birds as, of course, none had been imported during the war. Although I am of the opinion that Australian birds are second to none, both in beauty and interest, it is sad to be cut off from many old friends among the foreigners.

At the time I had three red Tanagers, a pair of Scarlet (Brazilian) and a hen Maroon, so I thought I would try to breed a domestic race of these birds. In this I have had some success. I have now bred them to seven generations, and have four main kinds, pure Scarlet obvious hybrids, Maroon with a dash of Scarlet, and Scarlet with a dash of Maroon. I have others showing various degrees of mixed blood. The hybrids are very beautiful birds.

I first paired the Scarlets together, and next summer mated their son to the hen Maroon. A point of interest is that I successfully mated him before he came into colour; he had white patches on his beak, but was quite brown. The hybrids are fully fertile, and Maroon is dominant over Scarlet. The Tanagers are all perfectly tame with people they know, but it is surprising how they can distinguish strangers.

These birds are kept in open garden aviaries with natural trees growing in them, and no other shelter is necessary in this climate ; have never been able to persuade them to go to nest in anything but a living natural tree. They will live in small aviaries, but will not breed, and they do not look well in them, and tend to lose their bright red colour. The smallest aviary I have ever successfully bred them in is 18 feet long, 6 feet wide, and 6 feet high, with a privet tree at one end and a shelter at the other. But they do much better in larger aviaries ; the larger the better. My largest is 25 feet long, 8 feet wide, and 12 feet high. When breeding only one pair of tanagers can be kept in an aviary, but they do not interfere with other birds.

My birds are fed on softbill mixture to which freshly grated hard-boiled egg is added to the daily ration. Fruit is, of course, essential, and I always provide banana, apple, pear, and orange, and paw-paw, grapes, and mangoes, etc., in season. In a country where fruit is hard to get, banana and one other fruit would be enough, but the birds would always have green food, grit, and crushed egg shells. They would also have insects daily. They like white ants themselves, but will not feed the young on them.

I think I should describe the breeding of these closely related species together, merely mentioning the differences. They both build cup-shaped nests of grass, small twigs, teased rope, and cotton wool. They often place broad leaves on the bottom of the nest. The Scarlet builds a very strong nest, the Maroon a much weaker one. I get over this by giving the hen Maroon some cotton wool, noting where she puts this, and placing a wire gauze shape at the *exact* spot where she wants to build. Nearly all hens will go ahead and build in the wire shape.

The eggs of both species are blue with reddish-brown spots, the Maroon eggs being smaller ; the Scarlet often lays three eggs, the Maroon never more than two. Incubation for both is twelve days. Whilst the young are in the nest live food only is given, and most of the feeding is done by the hen. The young are coloured like the hens. They always leave the nest on the twelfth day ; they cannot fly well at this stage, but are able to hop about in the trees. As soon as they leave the nest the parents start giving them banana and soft food as well as the live food.

The live food given should be varied as much as possible, the parents will not give the young white ants at all, but demand larger insects. I have on one occasion reared a nest of Scarlets on mealworms alone, but much better specimens are reared if a variety is given. Some hens flatly refuse to feed two days running on the same insects, but simply demand a variety. My old Maroon hen, now 19 years of age and still breeding, does this. I use mealworms, casemoth grubs,

grasshoppers, mantins, crickets, spiders, and the large green grasshopper found on privet trees, and sweet potato vines (the latter must be cut up). The green foods most relished are thistle buds and fresh lettuce.

The young are not independent of the parents until three weeks after leaving the nest; they must then be caught up or they will interfere with the next clutch. The Scarlet Tanager cocks come in full colour when 12 to 15 months old, and the Maroons 10 months to two years.

* * *

BREEDING THE SUPERB PARROT IN CALIFORNIA

(*Polytelis swainsonii*)

By DAVID WEST (Montebello, Calif., U.S.A.)

The breeding of three young Superb Parrots in 1955 and three again in 1956 in California has been something of an avicultural triumph. Doubtless members in Europe will not feel this is a very accurate and warranted statement, but it is now some fifteen years since this beautiful species has been bred in the United States.

Probably I ought to say that the term "Superb" is not very frequently used in describing *Polytelis swainsonii* and Barraband's is the more commonly used name. But I have always felt that the appellation "Superb" is wonderfully accurate for this species. The beauty of its plumage and elegant shape, accompanied by its winning ways, make it a favourite.

The only other recorded breeding of the Barraband's or Superb Parrakeet in the United States is the record by Mr. I. D. Putnam, of San Diego about 1940. The late Mr. Putnam told me that three young were reared from this breeding. One young from this breeding was a tame male which Mr. Putnam kept for a pet; later it passed into the hands of Mrs. Hubbell, of San Diego, and was the father of the young hybrid Barraband's \times Rock Pebbles she raised a few years ago.

It is odd that this species has proved to be so difficult to breed here in America. They are easily kept in good health and always appear to be happy and contented, but somehow they just don't nest. However, hybrids between male Superbs and female Crimson-wings were reared on several occasions by the late Dr. Ralph Woods and they were exceptionally beautiful birds. These hybrids all appeared to have been sterile when mated back to parents or *inter se*.

My own pair did not nest in 1952, 1953, or 1954. In each of these years the pair were obviously in breeding condition and matings and feedings were observed, but they never settled down to an actual nesting.

During 1955 and 1956 the male came into breeding condition slightly

head of the hen. Male Superbs display spasmodically throughout the year and their display is not unamusing. Beginning in March, the male began calling and displaying to a rather bored and uninterested female. This process continued and late in March the female became more receptive and interested. Very suddenly, in April, the female allowed the male to feed her very frequently and invited pairing. Even so, she had not visited either nest-box and did not seem to approve of either the grandfather-clock nest or the smaller box. In late April, following a period of about ten days where pairings took place several times a day, the female entered the smaller of the two boxes provided and began nesting. Incubation apparently began with the first egg and from that time until the young were about two weeks old the hen was observed only twice. She was a perfect prospective mother and did not leave the nest when I entered the aviary to replace food, etc.

During the incubation period the male would visit the nest-box and feed her. At this time the squeaking sound the hen would make when she was being fed by the male could be heard. The nest-box chosen was about 18 inches wide, 18 inches deep, and 18 inches tall—and so was sufficiently roomy to permit the male to enter and easily feed the hen without the danger of scattering or breaking the eggs.

The sound of young being fed was heard on the twenty-second day after incubation started. From about the third day following this the male began to enter the nest and to (apparently) feed the young as well as the hen. As Superbs are good-sized birds the male was observed spending an unusual amount of time eating to provide the necessary food for the family. Fruit, as apple and orange were appreciated, and fresh corn on the cob was also devoured. Greens, as *poa annua* or grass clippings, and the berries of the *pyracantha* were also given. Baked bread was given in the morning and again in the evening and seed was scattered on the aviary floor where the earth's dampness caused some of it to sprout.

The aviary the parents occupied was 17 feet long, 3 feet wide, and 6 feet tall. A shelter at one end was provided for inclement weather—which we do have in California! The nest-box was hung at the edge of the shelter and faced north. Rough wood chips were used as nesting material. A large stick was placed just below the entrance to the nesting-box and the male seemed to enjoy sitting on this perch and talking to his mate inside the nest every now and then. He would occasionally fly to the box, look inside, and then fly away—satisfied that all was well.

The youngsters prospered and the mother bird brooded them very closely for the first two weeks. An observation of the nest revealed that three of the four eggs had hatched and that the young were developing nicely. About the end of the third week a second look revealed that either the mother or the father were picking the feathers

on the back of the babies. Since the guilty parent was unknown and the picking was not dangerous nothing was done other than to keep hoping !

About the end of the fifth week the first two youngsters came out of the nest. They were strong on the wing and quite steady, but looked very unattractive because their backs were all feather-picked. The third youngster left the nest three days later and from the very minute she left the nest the mother began to pick her back so severely that the youngster would bleed. Neither parent would try to feed the third youngster once she had left the nest (for it was a young hen) and so this baby was taken to a friend who very kindly offered to hand-feed it for a few days until it was on its own.

Eventually all three of the young Barraband's or Superbs were placed together in an aviary where they have done very well. At this time (November) they appear to be two cocks and one hen—though no definite red feathers have come in on the youngsters thought to be cocks. The feathers on the back have grown in and one could not, at this time, tell that they had ever been picked.

I should like to add that Mr. G. Rayson Brown was also successful with this species during 1955 and 1956, rearing four youngsters in 1955 at about the same time my breeding took place and three youngsters in 1956.

If anyone could throw any light on the reason why the female picked the youngsters I should appreciate the information so that a recurrence could be avoided. From past experiences with this type of thing I have had females pick their youngsters one year and then skip two or three years. It certainly is an interesting problem and probably not too akin to the same problem in Budgerigars, because these larger birds do not over-nest (would that some of them would !).

It is interesting to note that the Barraband's in my collection and also Mr. Brown's have been old enough to nest for several years, but not until this year did they attempt to do so. Now one can only hope that other reluctant species will follow their lead.

* * *

THE BENGALESE FINCH

By ERICA EISNER (Oxford, England)

The Bengalese is well known as one of the hardiest and easiest to breed of the weaver-finches (*Estrildinae*) commonly kept in captivity. It is now also showing itself to be an excellent animal for laboratory study. The most frequent type is a piebald of brown ('chocolate') and white, and fawn and white birds are also common. Pure white birds have been bred for a long time, but it seems to be more recently only that 'self-coloured' browns and fawns have been noted. Judging by advertisements and the statement in a recent book (Risdon, 1953) that "I have never seen or heard of a self-coloured chocolate or self-coloured fawn", these seem to be not yet well known.

The classification into piebalds and self-coloureds is in fact quite arbitrary, for there is an unbroken gradation from birds with no white feathers through piebalds of different degree to birds with no coloured feathers. The ancestral bird was surely not a piebald or a pure white, but a self-coloured bird; this is not only obvious of itself, but there is evidence for it. Taka-Tsukasa (1922) quotes a description of the original Japanese stock, which apparently had no plain white feathers.

Wild birds with an odd few white feathers are not rare, but it would seem that natural selection keeps this tendency towards piedness suppressed, so that the normal type is maintained. A reasonable explanation for this is that birds showing clear patches of white feathers are more conspicuous than normals, and therefore more likely to be killed by predators. In captivity, a bird which had white feathers would not only not be eliminated, but would probably be cherished as a rarity and used for selective breeding. According to Taka-Tsukasa, the white Java Sparrow was produced in Japan from grey birds with white feathers in their wings. It seems most probable that the Bengalese was developed similarly.

The genetics of variation in the amount of white shown has not been worked out in the Bengalese, and as it undoubtedly depends upon a multiplicity of genes it would probably be extremely difficult to do so. Such is certainly the case in the mouse. Although that animal has been the subject of a vast amount of genetical work, it is only in recent years that much progress has been made in the analysis of 'spotting', i.e. of the variation in the distribution of white areas. Like that of all products of long-continued selective breeding, as Grüneberg (1952, p. 65) says, the genetics of spotting in the mouse is very complex. There is little reason to hope that the Bengalese provides an exception. On the average, the offspring of any pair of these birds tend to be intermediate in piedness between their parents,

but exceptions to this rule are frequent. I have no experience of pure white birds, but self-coloureds can be obtained by careful selection from pairings of birds having few white feathers.

In contrast to the complex problem of the genetics of piedness, that of the alternative colours is simple. When a bird has coloured feathers they are either brown or fawn, and these colours are mutually exclusive. Indeed, it is not only the plumage which shows this, for fawn-feathered birds have fawn pigment on beak and legs, and newly hatched chicks which will later grow fawn feathers have fawn coloured mouth markings and eye-balls, while future browns have the mouth markings and eye-balls dark. Incidentally, the mouth markings reflect also, though not so reliably, the future degree of piedness: self-coloureds have the complete horseshoe pattern characteristic of the Mannikin group of the Estrildines, but future piebalds have it disrupted to a degree correlating roughly with the disruption of the plumage pattern they will later show.

It is altogether evident that the genetic character of 'fawn' is a simple Mendelian recessive to that of 'brown'. Two fawn birds mated together will invariably produce fawn offspring, and no browns. Two brown birds which are known to have had no fawn birds in their ancestry will likewise be true breeding, but brown birds can carry the factor for fawn without its being evident except from the results of breeding tests. A pure brown mated to a fawn will produce only brown offspring. If these are then mated to each other, approximately one quarter of this second generation will be fawn; if they are mated to fawn birds about one-half of the offspring will be fawn. If a pair of brown birds breed occasional fawn young, then they must both carry the factor for fawn; if only one of a pair of brown birds has the fawn factor then that pair will never produce fawn offspring. Again, it is most probable that some wild birds do carry such recessive colour factors, but the chances are against their mating with another bird which also carries it. If this were to happen, the unusual offspring would probably have a smaller chance of survival than the normal type. In captivity, however, such recessive characters rapidly become more common by inbreeding and selection.

My aim in the foregoing genetical discussion has been to clear the ground for a discussion of the ancestry of the Bengalese, which has so far constituted a very vexed question. Some accounts (e.g. Risdon, 1953) say that the breed originated in Japan, but more cautious authorities say only that it has been bred for many years in Japan, or is often bred in Japan (e.g. Neunzig, 1921). Taka-Tsukasa (1922) gives the most informative account of the history of the Bengalese. He says that according to an old Japanese book on cage birds, the original stock was imported from China "about 200 years ago". He does not say whether these were wild birds or an already domesticated stock,



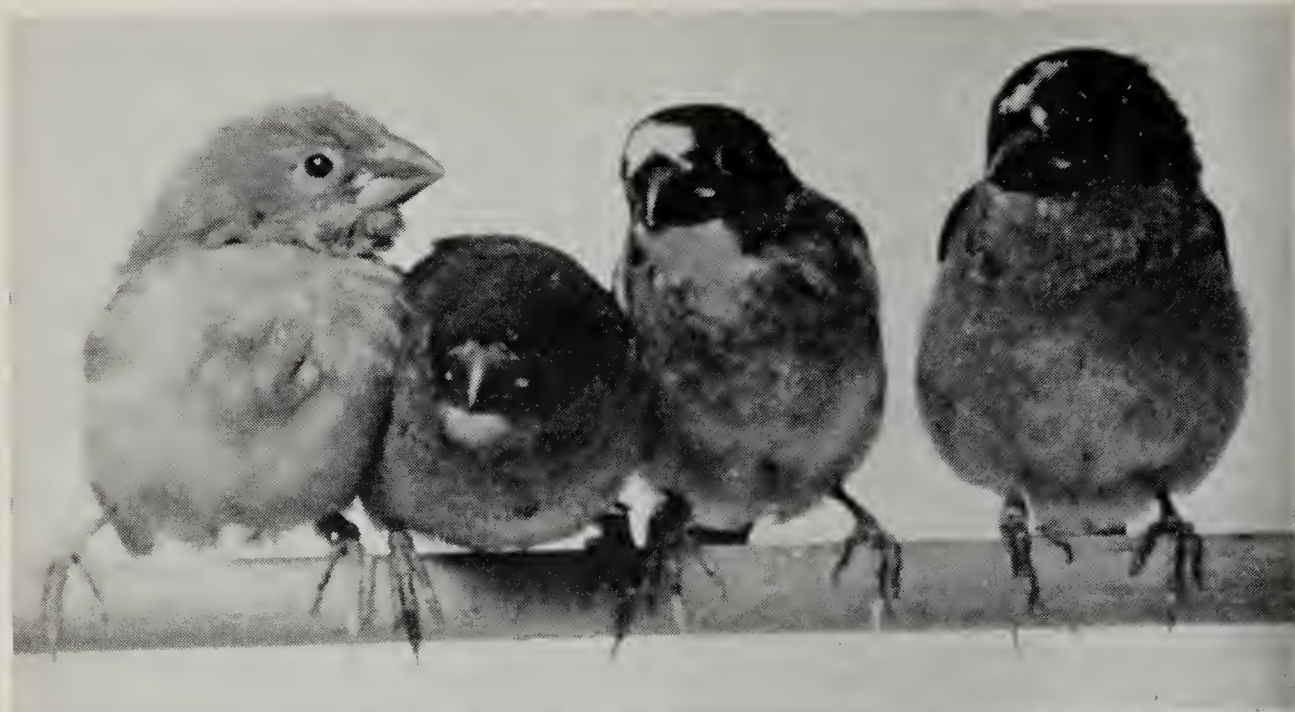
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BENGALESE FINCHES
(about life size).

A self-coloured male Bengalese courting a pied female. This shows in particular the slight markings on the belly feathers where these are not pure white.

To face p. 102.



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FIG. 1.—BENGALESE FLEDGLINGS.

The bird on the left is a perfect self-coloured fawn, while two of the brown birds may be classed as self-coloured, although they have a few white feathers—the male of Plate (1) is one of these. Such a simple juvenile plumage is shown by many mannikins; the dark upper parts and light belly are differentiated at about three months old.



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FIG. 2.—SKIN OF BENGALESE FINCH.

This shows especially the light edges of the breast feathers and the sharply pointed tail

To face p. 103.

it gives a description of the original species and says that the white and fawn varieties appeared considerably later. It may therefore be said that the Bengalese breed as we know it to-day originated in Japan, but from non-Japanese ancestors. The latter part of this statement is necessary also because no possible ancestral species occurs wild in Japan.

What, then, was this ancestral stock? It is quite obvious, and generally recognized, that the Bengalese resembles the Striated and Sharp-tailed Finches more than it does any other. However, it is nowadays quite generally, at least in this country, supposed to be some kind of hybrid of these types and possibly also the Silverbill; no evidence is ever given for this view.

Probably, the present acceptance of this hybrid theory stems from the reference of Dr. Butler (1894) for it. In the first two decades of this century, though, this view was frequently contested, and even Butler himself (1907) decided against a hybrid origin. The Bengalese was then usually thought to be a domesticated strain of the Sharp-tailed Finch. For instance, the reviewer writing on p. 112 of the AVICULTURAL MAGAZINE for 1902-3 says: "Domestication is also responsible for . . . red and white and pied forms (Bengalese) of the Sharp-tailed Finch. We perfectly agree . . . that there is no reason for supposing the latter birds to be hybrids." Recently, Steinbacher and Wolters (1956) have written that it is certainly wrong to suppose that the Silverbill (p. 119) is an ancestor of the Bengalese which they think is most probably a domesticated Sharptail (p. 142), but they do not discuss the matter. I hope to give convincing evidence that this is the correct view.

Possibly the Silverbill was suggested as a part ancestor in order to explain the occurrence of fawn individuals, for the Silverbill is fawn in colour though of rather a different shade. The knowledge that fawn colour is a mutant inherited in a perfectly normal way makes such an explanation altogether unnecessary, and there is no evidence supporting it. Indeed, if their statement is well established, Steinbacher and Wolters have the strongest possible evidence against the view that the Silverbill is an ancestor of the Bengalese. They state (p. 152) that although the Bengalese produces fertile hybrids with some Mannikins, hybrids between the Bengalese and the Silverbill are sterile. However, especially as elsewhere (p. 119) they suggest that a hybrid between the Sharptail and the Silverbill can be fertile, this point should be checked.

The Striated and Sharp-tailed Finches are considered to be members of the same species, *Lonchura striata*. (I use the generic name *Lonchura* after the most recent revision, that of Delacour (1943), although the names *Munia* and *Uroloncha* are more frequently applied.) The suggestion that the Bengalese is a hybrid of the Striated and Sharp-tailed Finches (and these do hybridize freely, according to Hopkinson, 1938) is both unnecessary and contradicted by the evidence. A

detailed account of the species is given by Stuart Baker (1926). There are two sub-specific groups which are distinguished on various grounds, the most obvious of which is the occurrence of 'lace markings' or squamations on the belly and rump feathers. The one group, native to Ceylon and India, forms the Striated Finches; the other, distributed from Nepal and Bengal to Malaya and China, consists of the Sharp-tailed Finches. My descriptions are based not only on those given by Stuart Baker and others, but also on my own examination of the collected skins in the British Museum of Natural History.

In all birds of the species the head, breast, back, wings, and tail are brown, while the belly and rump are lighter. In the Striated Finches the brown is very dark, tending to be almost black on the head and breast; the belly and rump are almost white and contrast markedly with the dark regions, especially as they show no squamations. The tail is not especially pointed, and is rather shorter relative to body size than in the Sharp-tailed Finches. The Sharptails have much less contrast between the dark and the light regions than do the Striated Finches. The brown tends to be of less deep a colour, and of a rather more reddish shade (this is not altogether clear in Stuart Baker's description, but is stated clearly by Vaurie (1949) and I have confirmed it). The appearance is further lightened because the central shafts of the brown feathers are much more conspicuously pale than in the Striated Finches, and because the edges of the breast feathers are outlined in a lighter shade. This last character is not shown by the Indian and Andaman Striated Finches but is shown by the Nicobar race. This race does, however, agree in all the other distinguishing characters, and also its limited distribution makes it unlikely to be relevant to this argument. The ground colour of the belly and rump is slightly darker in the Sharptails than in the Striated Finch; specimens from different regions show squamations to a varying extent, and where these markings are prominent they give a grey effect. The tail, as the name implies, is very sharply pointed: each feather individually is pointed and there is a marked gradation in length towards the central, longest, feather.

How, then, does the Bengalese compare with these wild birds? The easiest comparison to make is between them and a self-coloured brown Bengalese, and it is immediately obvious that this is quite different from a Striated Finch, as from all other species, but resembles some Sharp-tailed Finches greatly. The brown colour is not as dark as that of the Striated Finches, but has the same tone as that of the Sharptails; the belly and rump do not contrast strongly, and bear squamations. The tail is beautifully pointed. The shafts are prominent on the brown feathers, and the breast feathers have light edges. All these characters can also be seen on the brown and white piebalds, though of course there is no such striking general impression of



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STRIATED AND SHARP-TAILED FINCHES

(about $\frac{2}{3}$ natural size).

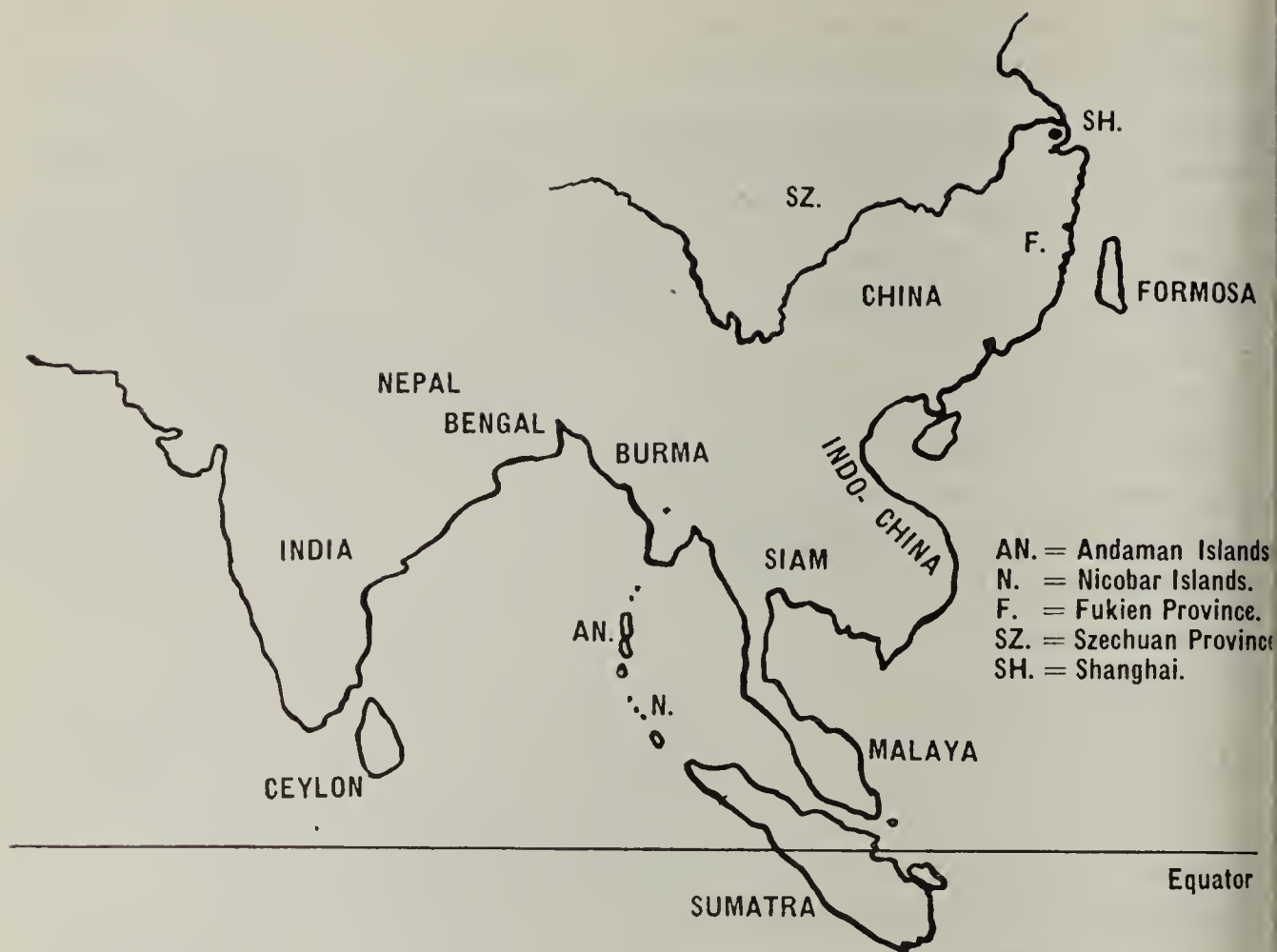
From left to right : Striated finch from Madras, India ; Sharptails from : Mussoorie, Nepal ; Henzada, Burma ; Penang, Malaya ; Szechuan, China ; Fukien, China ; Formosa.

similarity. As long as one remembers that the white feathers of the piebald are superimposed upon the characteristic species plumage pattern, it is obvious from examination of the feathers that the Bengalese is a tame Sharp-tailed Finch, and does not have the characteristics of a Striated Finch or any other species.

Unfortunately I have not been able to compare the Bengalese with living Sharp-tailed Finches, as these are not freely on the market. Dr. Desmond Morris (unpublished) has compared the behaviour of the Bengalese with that of the Striated Finch, and with other species of Mannikin, in detail. He found that the behaviour patterns of the Bengalese were essentially the same as those of the Striated Finch, while differing from those of the other species. It is especially noteworthy that the Bengalese has no behaviour components characteristic of the Silverbill, whose behaviour is very clearly distinct from that of the Striated Finch. It is a pity that we do not know how far, if at all, the behaviour of the Sharp-tailed Finch differs from that of the Striated Finch; one would expect that any difference which may exist would be very slight. Mr. William Bain, vice-chairman of the National Bengalese Fanciers' Association, wrote to me that "the Sharp-tailed Mannikin closely resembles the Bengalese in shape, size and mannerisms".

I think there can be little doubt that the Bengalese is a domesticated form of a Sharp-tailed Finch, i.e. that it is a member of the *acuticauda* subgroup of *Lonchura striata*. This view has frequently been expressed in the past, and I believe the evidence necessitates its acceptance in place of the theory of hybrid origin. It is less easy to say from where exactly the ancestral stock must have come. The most comprehensive account of the *L. s. acuticauda* group, that of Stuart Baker (1926), is rather unsatisfactory. This account recognizes three subspecies: *L. s. acuticauda* itself from Nepal and Bengal, *L. s. subsquamicollis* from Burma, Indo-China, Malaya and Sumatra, and *L. s. squamicollis* from China. The distinction depends largely on two characters: the nature of the light edges to the breast feathers, and the strength of the markings on the belly feathers. However, as so often happens, the natural populations do not fall clearly into separate groups, but instead there seems to be a continuous change between one area and another; such continuous change can never be shown by the usual type of classification.

The majority of the British Museum specimens from the Indian end of the range are admittedly like Baker's *L. s. acuticauda*, which is described as having breast feathers with rufous edges and only faint squamations. Similarly, birds from peninsular Siam and Malaya have strong squamations and conspicuous pale edges to the breast feathers, in accordance with the description of *L. s. subsquamicollis*. But birds from areas in between, such as Burma, are quite clearly



South-East Asia : The region in which *Lonchura striata* occurs wild.

intermediate. Baker's description becomes much more seriously inadequate for birds from regions eastwards of Indo-China, for it does not suggest that there is a comparable trend of change across China. The description of *L. s. squamicollis* applies well to birds from the West China province of Szechuan. These have very heavily marked belly feathers and very clearly defined broad pale edges to the breast feathers, which are of a yet lighter brown than those of the other sub-species. This characteristic type of breast feather is shown by all specimens from China but birds from the east coast provinces, especially Fukien in the south-east, again have less strong squamations. The belly feathers of these birds are comparable to those of specimens from lower Burma, but their brown feathers are distinctive in being considerably paler. Birds from Formosa have even less clear squamations, and also their brown feathers are of a slightly richer tone than that of the Chinese mainland birds ; this has previously been pointed out by La Touche (1925), and Oberholser (1926) has even created a subspecies for the Formosan type of Sharptail. The Formosan specimens are in fact extremely similar to birds from Nepal, the only reasonably apparent difference being in their having slightly more conspicuous pale edges on the breast feathers.

The Bengalese clearly does not resemble the birds from the central part of the Sharp-tailed Finch's range, for it never has such strong plumations. The common name of 'Bengalese Finch' might be considered as circumstantial evidence of origin from the Bengal area, but this would be extremely unreliable. The name 'Bengali' was originally applied to the Cordon-bleu from Africa and may have been a corruption of Benguela. It was later used indiscriminately in the bird trade for many of the weaver-finches, and was then restricted to the Pied Mannikin as a result of Dr. Butler's influence (Flower, 1906). It would be interesting to know what the Japanese vernacular name for this bird signifies. It seems much more likely that the ancestral stock came from South-East China and/or Formosa. Iwaka-Tsukasa says that the original Japanese stock came from China and that the feathers of the abdomen were "white with pale, dusky streaks". Amongst my own stock of Bengalese, comprising over a hundred birds, the intensity of these streaks is rather variable, but seems to be usually less strong than that of the Fukien specimens while stronger than that of specimens from Formosa, to which that province is nearest. Specimens from other parts of China, whether from the Shanghai region further north along the coast or westwards, all have too strong markings: As the breast feathers of the Bengalese are clearly of the Chinese type, with conspicuous pale edges and of a rather pale brown, I think it must be concluded that the ancestors of the Bengalese most probably came from this South-East China region. In summary, the Bengalese is a domesticated form of Sharp-tailed Finch which was developed in Japan from stock probably originating in South-East China or Formosa. There is no reason whatsoever to suppose that it is a hybrid of the Sharp-tailed Finch with any other bird.

ACKNOWLEDGMENTS

I am most grateful for the help given me by Mr. J. D. Macdonald and the staff of the British Museum Bird Room, and by Mr. W. Bain and Mr. N. Tolmaer of the National Bengalese Fanciers' Association. I would like to thank especially Dr. A. J. Cain and Dr. D. J. Morris for their encouragement and advice, and Dr. Morris and Mr. J. S. Haywood for the photographs. I am extremely indebted to the Nuffield Foundation to whom I owe my apparatus and birds.

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* * *

LONDON ZOO NOTES

By J. J. YEALLAND

A White-necked Picathartes has been received from Sierra Leone as a present from Mr. J. I. Menzies who hand-reared the bird from a nestling. He fed it on small frogs, lizards, mealworms, grasshoppers, insectile food, and minced lean meat. It is now living with the one collected by the first "Zoo Quest" in 1954, and is, of course, only the second living specimen to be brought from Africa. Like the first specimen, this young bird has several filoplumes on the top of the otherwise bald head. The Grey-necked Picathartes brought by Mr. Webb from British Cameroon during 1948 continues to thrive.

Other gifts are a Citril Finch from Mr. W. Schenck, two White-throated and one Red-throated Humming Birds from Mr. Randau, an Indian Broad-billed Roller and a Loo Choo, or Lidth's Jay from Messrs. Brooke Bond and Co., a Fohkien Grey-headed Crow-Tit from Mr. G. H. Newmark and a small number of various insectivorous Indian birds, of which a Black-naped Oriole is the most noteworthy, from Mr. C. E. Engledew.

A fine Masai Ostrich has been received in exchange from the Bristol Zoo and a Pileated Kingfisher has been deposited.

The Cormorant hatched on about the 20th of February is now fully grown and flying. A second nest has been built and probably contains eggs. A Gannet's egg is being incubated in the same aviary.

Three Black-footed Penguins, five blue-bred green Masked Lovebirds, and two Cockatiels have been bred. Four Swinhoe's Pheasant chicks have been hatched and are being reared by the parents which successfully reared two last year. It is a pity that this handsome pheasant is

not more widely kept, for, like the Mikado, it is found only on Formosa and may be in danger of extinction there.

Great Eagle-Owl, Spotted Eagle-Owl, Maned Goose, and Impeyan Pheasant are the most noteworthy of the birds now incubating eggs. The "Homing" Budgerigars are, of course, breeding, not all of them in the boxes provided, for several pairs are nesting in the trees about the Gardens and in Regent's Park.

The Reeves deposited by the Norfolk Naturalists' Trust last autumn have now been sent to the Cley marshes.

* * *

BRITISH AVICULTURISTS' CLUB

The fifty-seventh meeting of the Club was held at the Rembrandt Hotel, Thurloe Place, South Kensington, S.W. 7, on Wednesday, 15th May, 1957, following a dinner at 7 p.m.

Chairman : Dr. E. Hindle.

Members of the Club : Miss P. Barclay-Smith, Hylton Blythe, Mr. W. Bolton, Miss K. Bonner, K. F. Clarke, W. D. Cummings, Mr. D'eath, Squadron-Leader C. Everitt, Mrs. C. Everitt, Miss R. Ezra, Miss S. A. Fothergill, H. J. Harman, Miss S. I. Hobday, F. E. B. Johnson, Miss E. M. Knobel, Miss M. H. Knobel-Harman, E. C. Lewis, Mrs. E. M. Lonsdale, S. Murray, K. A. Norris, C. M. Payne, Mr. A. A. Prestwich, D. M. Reid-Henry, R. C. J. Sawyer, D. Seth-Smith, Mr. P. Sutton, Mrs. R. Upton, E. N. T. Vane, C. H. Wastell, Mrs. C. H. Wastell, Mrs. G. Wheatley.

Guests : Mrs. K. F. Clarke, S. A. Croucher, Mrs. S. A. Croucher, Mr. E. Lewis, Miss D. G. Lonsdale, Mrs. S. Murray, Mrs. C. M. Payne, Mrs. D. Seth-Smith, Mrs. P. Sutton, Mrs. E. N. T. Vane, Miss F. Wood, W. A. Wood.

Members of the Club, 32 ; guests, 12 ; total, 44.

Mrs. Rosemary Upton showed slides to illustrate "Some Shetland Birds". But let it not be supposed that this was just another talk on the Islands' birds, illustrated by the inevitable series of slides of little interest to anyone other than the photographer.

Mrs. Upton revisited the Shetlands in May-June, 1955, with the express purpose of photographing the Whimbrel and its nest. In this she succeeded admirably, and procured a fine series of photographs of a pair of nesting birds and a complete record of the hatching of four chicks. The time from when the first egg started to that of the last chick leaving the nest was 46 hours—no less than 32 of which Mrs. Upton spent in observation. We were also shown excellent pictures of the Great Skua and its nest, Arctic Skua, Dunlin, Red-throated Diver, and others. Enjoyable though the pictures were, the

speaker's amusing description, enhanced by humorous sketches, how they were obtained, greatly added to the enjoyment. Altogether it was a very happy blend of scientific information and enjoyable narrative.

E. N. T. Vane deserves a special credit for the efficient way in which he handled the projector.

ARTHUR A. PRESTWICH,
Hon. Secretary.

* * *

NEWS AND VIEWS

The Bronze Medal of the Avicultural Society of South Australia has been awarded to C. C. Burfield, for breeding the Red-backed Quail, and to H. J. Hutchinson, for breeding the Black-fronted Quail.

* * *

An overseas visitor recently exclaimed, "Why, there's the Magazine all in one row, I never saw that before!" Actually, it is not in one row but in three; the 62 volumes occupying 7 ft. 2 in. of shelf space—18 volumes, 20 inches, to the credit of our present Editor.

* * *

Frank A. Hartman, of the Ohio State University, writes: "I kept a pair of Sparrow Hawks in a cage in the laboratory for more than ten years. The female laid eggs and incubated them, but they never hatched because apparently they were not fertile. These birds were taken from the nest and kept in a flight-cage throughout life."

* * *

Mrs. Jean Warner, Ibadan, Western Nigeria, writes concerning Red-faced Lovebirds: "You say the flight-feathers of imported birds are invariably ruthlessly cut, but this is also true when one purchases birds from itinerant Hausa traders. In some cases too, the banded tail-feathers are extracted and used as a juju (native charm), and the same applies to the red tail-feathers of the Grey Parrot."

* * *

G. A. Gjessing, Drammen, Norway, reports an interesting event. In January his Rock Peblers started to lay on the ground of the flight. The egg was put in a box on the ground and three further eggs were added to it. On the 10th February the first of three chicks was hatched, and all three, possibly one male and two females, are now fully independent. The temperature during this time was down to 20° F. in the heated shelter and about 0° F. outside.

Preliminary reports : E. J. Boosey, Senegal Parrots sitting on four eggs : “ *Darenth-Hulme*,” Pied Imperial and Green Imperial Fruit pigeons have laid several eggs, but only one pair of Pied is sitting in earnest : Major V. Dilwyn Jones, Red-bellied Conure, three young ones in the nest and three eggs still to hatch : Kenneth Russell, Senegal Parrots, two eggs failed to hatch, contained well-developed embryos.

* * *

Some of our members do not seem to be familiar with the universally accepted rules governing the publication of notes and papers. When a writer submits a paper to a journal for publication, it is understood that he has not submitted it to any other journal, and will not do so unless it is rejected by the first recipient.

Our Editor has recently received several items it was intended to publish, only to find them appearing in other publications. Editors generally do their best to prevent duplication, but such is occasionally beyond their endeavours, and the same paper appears in more than one journal. We trust our contributors will lessen our Editor's worries by submitting only original matter.

A. A. P.

* * *

REVIEWS

BIRD WONDERS OF AUSTRALIA. By A. H. CHISHOLM. Fourth edition revised and enlarged. Angus and Robertson, London, 1956. Price 25s. net.

As the author states in the preface, this is not intended as a textbook of Australian birds, but its purpose is to present a factual, gossipy account of the “ Believe-it-or-not ” features of Australia's remarkable bird life. The book is divided into two sections—Biographical and General—and in the first part all the outstanding groups of Australian birds have been dealt with. Aviculturists will find much of interest concerning the habits in the wild of the birds they have known only in captivity, and many will wish that the chapter “ The Land of Parrots ” had been longer. Though admittedly a popular book, it contains a wealth of information, and many problems are explained in a clear and concise manner. To quote the titles of some of the chapters in the second section—“ Good neighbours—sometimes a study of the relations of birds and man in Australia) ” ; “ Queer relations of birds and insects ” ; “ Carrying the baby in birdland ”—give some idea of the diversity of aspects of bird life the author deals with. The final chapter, “ To settle an argument,” is devoted to

discussion of various questions concerning birds which have been raised by correspondence during the author's conduct of *Nature* columns in various newspapers. There are 64 photographic illustrations and a coloured photograph frontispiece.

P. B-S.

SOME COMMON AUSTRALIAN BIRDS. By ALAN BELL with drawings by SHIRLEY BELL. Published by the Oxford University Press. London, 1956. Price 35s. net.

This small handbook contains descriptions and illustrations of just over a hundred of the 650 or more birds native to Australia. As the author states in his introduction, the book is designed to help people in the more closely settled parts of Australia to recognize birds they may see at home in the garden or during a day's outing. In each species the range and salient points of its appearance on a brief view is given, and followed by more detailed description and an account in somewhat picturesque language, of habits, behaviour, nest, etc. The illustrations have been executed with the aim of giving an impression which will help in quick identification. Some are good but others are out of drawing. Eleven species of the Parrot family have been included, but the illustrations of some of these are not very happy.

B. B. F.

* * *

NOTES

SONG OF VIOLET-EARED WAXBILL

I feel I owe an apology to the charming little Violet-eared Waxbill for saying in my book, *Foreign Bird Keeping*, that it has nothing much in the way of a song. When I wrote this I had not kept the species since before the war, and I still cannot remember that the male of a pair in breeding condition we then had was much of a songster—but it is a long time ago; I should say about 1935.

Now, however, we have a pair that have just gone to nest, and the exquisite beauty of the cock is quite matched by the beauty of his song.

When one thinks of small foreign seed-eating songsters one's thoughts naturally turn to members of the Serin family and chiefly perhaps to the well-known Green and Grey Singing Finches—both delightful songsters—particularly the latter.

Waxbills, on the other hand, are not remarkable for their song, so it is all the more unexpected that the Violet-eared should have such a fine one. Its song, though perhaps rather more varied, is remarkably like that of the Skylark, and if it had the same astonishing volume in relation to the bird's size as is the case with the Green Singing Finch, I have little doubt that it would be acknowledged as one of the fine songsters of all the small seed-eaters.

EDWARD J. BOOSEY.

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NEW MEMBERS

The eighty-seven Candidates for Election in the March–April, 1957, number of the *VICULTURAL MAGAZINE* were duly elected members of the Society.

CHANGES OF ADDRESS

Major C. N. CLAYDEN, to The Middlesex Regt., H.Q. Eastern Command, Hounslow Middx.

J. DALBORG-JOHANSEN, to Jernbanegade 6, Dyr-laege, Odense, Denmark.

W. W. DIEDRICH, to Koningin Wilhelminalaan 354, Voorburg, Holland.

K. A. OSTERMEYER, 85 Eastern Road, Romford, Essex.

JAMES TAYLOR, to Alstone Lawns, Alstone, Tewkesbury, Glos.

ANDREA TIPA, to Salita San Rocco 7/21, Genoa, Italy.

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The charge for Members' advertisements is ONE PENNY PER WORD. Payment must accompany the advertisement, which must be sent on or before the 15th of the month to A. A. PRESTWICH, 61 CHASE ROAD, OAKWOOD, N. 14. All members of the Society are entitled to use this column, but the Council reserves the right to refuse any advertisements they consider unsuitable.

WANTED

Peters, *Check-List of Birds of the World*, volume 1.—R. G. SMITH, 247 Gladstone Avenue, Wood Green, London, N. 22.

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AVICULTURAL MAGAZINE, 1954, 1955, 1956, complete as new, 30s.—R. T. KYME, 30 King Street, Kirton, Boston, Lincolnshire.

Surplus copies of coloured plates by D. M. Reid-Henry that have appeared in recent numbers of the Magazine, suitable for framing. Price 1s. each, post free. Mountain Blue Robin, Green-headed Olive Sunbird, Scarlet-tufted Malachite Sunbird, Hartlaub's Touraco, Blue-shouldered Robin-Chat, Scarlet Tanagers, Wattled Starling, Emerald Starling, Lineolated Parrakeet, Brown-headed Parrot, Red-bellied Conure, Yellow-cheeked Conure, Red-faced Lovebird, Golden-winged Parrakeet, Green-winged King Parrakeet, White-bellied and Black-headed Caique, Vieillot's Crested Fireback Pheasant.—HON. SECRETARY, 61 Chase Road, Oakwood, London, N.14.

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Nat. Hist.

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Founded 1894

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THE AVICULTURAL MAGAZINE

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**The Editor : Miss Phyllis Barclay-Smith, 51 Warwick Avenue, London,
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THE OSTRICHES AT THE AGE OF SIX MONTHS.

[Höfner.

AVICULTURAL MAGAZINE

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AND THE AVICULTURAL SOCIETY OF AMERICA

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JULY-AUGUST, 1957

NOTES ON CAPTIVE-BRED OSTRICHES AT THE BASEL ZOOLOGICAL GARDEN

By Dr. H. WACKERNAGEL (Basel, Switzerland)

During 3rd-9th September, 1956, eleven healthy Ostriches were hatched at the Basel Zoo after an incubation period of 47-53 days. The clutch of sixteen eggs was incubated by the parent birds themselves. Seven eggs were placed in an incubator after 38, and the remaining eggs after 48, days of incubation, because of the cold and rainy weather. Four eggs did not hatch. They proved to be infertile or contained dead embryos. One Ostrich hatched under the parents was found dead in the nest. The newly hatched chicks were placed in a modified poultry house which serves mainly for raising birds. It has a wooden floor, big windows to the south, and access to a lawn. The floor was covered with sand and the room was heated by infra-red lamps to a temperature of 25°-30° C. At the beginning the temperature was never allowed to fall below 20° C. The little birds soon seemed to find places under the lamps where they felt comfortable. They were left without food for about two days, then dishes were put before them containing chopped fresh alfalfa, carrots, leaves ofandelion and, at times, lettuce. In addition, they were given a pelleted all-mash mixture designed for pullets, containing about 12 per cent of crude protein, Spratt's Weetmeet, some hard-boiled egg, and crushed Ostrich-eggshell. From the beginning the green stuff, especially alfalfa, was much liked but the pellets, too, were accepted in increasing quantities and we feel that we owe much of our success to this well-balanced diet. Water was offered about twice daily and the birds took to it most of the time, but we do not think that it is essential. At first the birds seemed quite avid for their own droppings but this habit was soon lost. Anyone who has tried raising Ostriches knows how much devotion and skill it takes to induce these birds to eat sufficient

quantities of food. When left alone they will walk about, peck now and then at conspicuous objects, and finally die of starvation. In captivity someone has to take the place of a parent bird, not only during the first days but for a number of weeks, and knock at the dish or the floor where the food is placed, or move the food in the dish or let it drop in front of the birds, etc. It will pay to take this trouble. Of course, it is easier to raise a whole flock, but even so the mutual stimulation does not seem to suffice. I often put this sentence in my notes: "Now it seems that the birds will soon settle by themselves"—but invariably it proved necessary or at least advantageous to keep them company. By touching the bellies it was possible to find out if they were duly filled. It seems to be advisable to keep them company up to the age of about three to four months.

Our birds developed nicely and never caused much worry. On sunny days they were allowed to exercise freely in the open, which stimulated their appetite and made them less excitable. Furthermore, plenty of exercise seems desirable for sound development. On the lawn the birds revealed their herbivorous nature by pulling out and eating grass, denuding whole areas of growth down to the ground. Eating, sleeping, and preening were performed at regular periods. Feeding was most intensive during the two to three hours before sunset and stimulating the birds during this time of the day is considered most effective. In other words: the opportunity of obtaining full bellies in the evening should not be missed.

One of the birds was lost at the age of about three weeks. It had not eaten for about two days and the dissection revealed its intestines heavily filled with small pebbles. We do not know, however, if this was the actual cause of death.

When the birds were about two months of age the pellets could be offered dry in a separate dish and a calculated dose of a calcium-phosphorus-vitamin-D-preparation was given in addition. At that age the daily allowance per bird was about 1 kg. of chopped vegetables (mostly alfalfa) and about half a pound of pellets and Spratt's Weet-meet. The daily exercise on the lawn was never discontinued, in spite of the increasingly cooler weather and occasional fall of rain and snow. Cold alone did not seem to hurt the birds when they were exposed, as long as they kept moving. The birds obviously enjoyed these outings, mostly indulging in lively dances. Room temperature often fell below 20° C.

As the birds grew bigger enormous quantities of food were eaten. In December cabbage was introduced in place of alfalfa, which was not available any more, and the pellets were given as the only concentrate. Consumption then amounted to about 1 kg. of concentrate and at least twice that amount of vegetables per bird per day.

Dancing was often performed in the stable, too, which occasionally

caused skin lesions and bruises on the birds and broken windows in the building. The windows consequently had to be screened by wire netting. We did not worry about the birds' injuries at first, taking them as a sign of health and vigour, but after a while it became necessary to move the birds to larger quarters. In February the Antelope House became the new home of the birds, which had almost attained the height of a man. After a few days of excitement and decreased food consumption the Ostriches settled down nicely. Soon the appetite was regained and in March the daily consumption of each bird had risen to 2 kg. of pellets and about 7 kg. of vegetables. They continue to develop into splendid specimens, pleasing their keepers by their tame and mannerly conduct.

* * *

ON THE DISPLAY AND BREEDING OF THE KING BIRD OF PARADISE, *CICINNURUS REGIUS REX* (SCOP.) IN CAPTIVITY

By STEN BERGMAN (Rönninge, per Stockholm, Sweden)

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The King Bird of Paradise, *Cicinnurus regius* (Linnæus), is certainly one of the most magnificent birds of the world. The vermilion colouring of the head and upper parts of the body, shimmering with every movement, is of a supreme beauty. Even more remarkable are the adornments with which the male bird is furnished: the two superbly sweeping tail wires, each tipped with a gleaming, spirally curved disc. In addition, there are the brown, fan-like side-plumes bordered with emerald green, which lie folded under each wing and can be spread out at will.

Although the King Bird of Paradise was given its name by Linnæus in 1758, its life and habits in the tropical jungle are still very little known. When Hartert, in 1910, wrote an article about those Birds of Paradise whose eggs were at that time known (*Novitates Zoologicae*, 17: 34-490), he expressed his surprise that nobody had succeeded in finding the nest of *Cicinnurus*, since in certain parts of its range in New Guinea and on a few neighbouring islands the bird is not, after all, so rare.

At the end of March, 1929, however, Wilfred Frost discovered the first and, as far as I know, hitherto only known nest. This find revealed the quite unexpected fact that the King Bird was a hole-breeder in contrast to all other species of Birds of Paradise, which have open nests. The nest found by Frost was built in a small tree, about 7 feet from the ground. He describes the nest as follows: "The nest hole

was small, about $1\frac{1}{2}$ inches in diameter, and approximately 18 inches deep, but filled to within a few inches of the lip with palm fibre. The eggs, two in number, measuring 27.5×21 mm., were of a cream white, flushed with pink, typically marked and curiously resembling except for size, those of *Paradisæa apoda*." (*Avicultural Magazine* (4), 8: 33-5, 1930.)

The first live Birds of Paradise which came to Europe—two *Paradisæa minor*—were brought home in 1862 by Alfred Russel Wallace and placed in the London Zoo, where a number of different species have since been kept, as in many other Zoological Gardens.

Up to the present, no Bird of Paradise has been bred in Europe although some instances of egg-laying have occurred. As far as I know the only species which has ever successfully bred in captivity before 1956 is "Empress of Germany's Bird of Paradise" (*Paradisæa apoda augustævictoriæ* Cabanis), of which in 1942 one young was reared in Prince Dharmakumarsinhji's aviary in Bhavnagar, India (*Zoologica New York*, 28: 139-144, 1943). In the Zoo of Surabaya, on Java a King Bird of Paradise, according to Frost, laid two eggs which were hatched out, but the young died in the nest. The same female later laid one more egg but failed to incubate it (*Avicultural Magazine* (4), 8: 33-5, 1930). This, as far as I know, is the only attempt made by a King Bird to breed in captivity before 1956.

When returning to Sweden from two journeys to Dutch New Guinea in 1948-49 and 1952-53 for ornithological research, I was permitted by the Dutch authorities to bring to Sweden a number of live Birds of Paradise for the purpose of continuing my studies and observations on these birds and, if possible, to make breeding experiments with them. For my first permit I am much indebted to my colleague of the 1948-49 expedition, Dr. M. A. Lieftinck, then Director of the Zoological Museum in Bogor, Java. For my second permit I have to thank H.E. the Governor of Dutch New Guinea, Dr. J. van Baal, the former resident of West New Guinea, Mr. L. L. A. Maurenbrecher, and Professor Dr. L. F. de Beaufort.

Among my Birds of Paradise were some male King Birds, *Cicinnurus regius rex* (Scopoli). I did not, however, succeed in bringing home any female of this species, but through the courtesy of Director S. van Reesema and Ir. F. J. Appelman, of the Rotterdam Zoo, I was permitted to exchange one male *Cicinnurus* for a female of the same species.

In October, 1955, this female was joined with a male that had just changed its plumage and the pair was allotted a space of $17\frac{1}{2}$ m² in my house. The room was planted with a number of *Monstera*, *Ficus*, *Bougainvillea*, and other tropical plants. The floor was covered partly with sand and partly with moss. The room had a constant temperature of 25° C., regulated by thermostat, and the necessary moisture was

ected by squirting all plants and the moss with water every day. Two sides of the room were lighted by two double windows on each side and two electric tube lights were burning in the King Bird's room for twelve hours a day—from 8 a.m. to 8 p.m.—all the year round.

As nesting sites a vertical log and two nest-boxes were installed. All the three nesting sites had different-sized entrance holes.

Shortly after the male bird had been let into the female's room, in which she had spent over three months waiting for him to finish his moult, he started his courting. He knew her well, since their rooms had been separated only by wire mesh.

He began his courtship by raising his tail and tail wires forward until they lay at right-angles to the length of the body. He then spread out his wings so that they were slightly cupped, as shown in Plate 4. Turning towards the female, he constantly vibrated his wings, which were soon spread out to their full length.

Suddenly he changed his display completely. Instead of sitting on the branch the next instant he was hanging upside-down with his feet clinging to it. His wings were still fully expanded and vibrating. The bill was open, so that the yellow-green gape was plainly visible.

After hanging in this manner for nearly ten seconds he closed his wings and, still in a hanging position, swung his body from left to right for a few seconds. He then released his hold, dropped a short distance, and flew on to the branch.

Some days later, at 11 a.m., the male bird was singing. The song is somewhat similar to the song of the skylark, although not so loud. When the male bird sings, the discs of the tail wires are in constant motion. Whilst he was singing the female flew over and sat on a branch near to him.

He then expanded his wings and vibrated them. He moved closer to her and sat on the same branch. Then he began displaying in the usual manner, i.e. he expanded the fans and drew them up towards his head, as shown in Plates 2 and 3. At the same time he puffed out the white feathers of the underside, so as to become almost spherical, sweeping his tail wires up over his back as illustrated by the photographs just mentioned. His head was raised obliquely upwards and constantly swayed slightly from side to side.

During this display the male sat with his back turned towards the female. She moved nearer to him, so that she was at a distance of approximately 5 cm. from him. While he was displaying she occasionally picked at his feathers.

All through the winter the male was observed displaying for the female almost every day and sometimes several times a day. The most usual time for the display was in the morning hours between 8 and 10 and in the afternoons from 3 to 4. This applies to the winter months. During the summer months the birds were not excluded from the

Swedish summer daylight, which during the lightest period, in June, lasts for approximately twenty-one hours out of the twenty-four, in the Stockholm area.

In their native country Birds of Paradise are used to approximately a twelve-hour day and a twelve-hour night. During the winter months in Sweden, where, in the Stockholm area, there is only about six and a half hours' daylight at the darkest period, the birds were, as already mentioned, exposed to twelve hours of artificial light. I have never noticed that they suffered any inconvenience from the long daylight in summer. As a compensation, they took one or several naps during the day. During the summer, also, the display-times have been assigned to the same time as in the winter, but the variations in regard to the time have been greater.

The most frequent way of display of the King Bird is illustrated on Plates 2 and 3; in exceptional cases it continued for two minutes, but usually it was considerably shorter. When the male is really in the mood for display he repeats his performance many times and it may be observed at any time of the day, or in the evening.

When the display has continued for a while in the normal manner with outspread fans and upbent tail wires, often the male will suddenly turn round and continue the performance in the opposite direction. Usually he alters his display after this complete turn, so that the fans are drawn in under the wings and the bird, with wide-open beak, sways his tail from side to side in the manner shown in Plate 1. A departure from this attitude is that the fans remain expanded while the tail wires are swayed from side to side. The body remains stationary during this display.

Since 10th October, when male and female were placed together, I have seen the inverted display many times during the course of the winter and spring. Members of my family have also sometimes seen this display on other occasions and, without doubt, the male often performed his inverted display when he was not under observation. The first part of the upside-down exhibit usually continues for five to ten seconds and the second phase, when he hangs with closed wings and sways from side to side, takes a similar amount of time. But on one occasion he hung with closed wings, completely motionless, for almost one minute. The various forms of display which I have observed agree in all essentials with those described by Ingram for a bird kept in captivity (*The Ibis* (9), 2 : 223-9, 1907).

During the course of the spring the female began to show increasing interest in one of the nest-boxes, the one with the largest entrance hole (diameter 8.5 cm.). In the middle of December, 1955, she had been observed for the first time to sit in the entrance hole and look in and a few days later she went inside. During the four following months she made short, sporadic visits to the nest-box. In May, 1956, however, she

ew in almost every day, and sometimes she would stay in the nest-box for half an hour to a few hours. I provided the nest-box with moss, dried fern leaves, and very thin grass so as to imitate a kind of nest. Moreover I put fern leaves and dried grass into the birdroom. The female accepted this nest but completed it with the finest grass straws she could find in the aviary.

In connection with her growing interest in the nest, the male became more ardent in his courtship. On the 24th May the male chased the female from branch to branch. She moved slowly out of his way. Now and then she stopped and for the first time I saw her sitting in mating position with her body lowered against the branch and her tail raised. Her head was pointed in an upward direction in exactly the same manner as the male's during the normal display. But when the male came near she flew away again. This happened several times. As soon as the male saw her take up this position he immediately flew to her, but she continued to avoid him. Consequently no mating took place.

After the male had been pursuing the female for some time he displayed in inverted position, but even this acrobatic performance did not lead to any mating.

On 11th June the female was in the nest-box the whole morning. When I left home at 10 a.m. to drive 30 km. into Stockholm she was still inside the nest-box. The male displayed outside the nest-box in the morning, although the female could not see the performance. At noon my wife telephoned me to say that there was an egg in the nest-box. When I returned in the afternoon the female had come out and was eating. I then went in and looked into the nest-box, which was so constructed that part of the front could be swung open by means of a hinge.

The egg was exceptionally large in comparison with the bird and proved to be a typical Bird of Paradise egg: cream-coloured, with numerous chocolate-brown streaks on the large end. The female protested strongly when I approached the nest and she continued to express her discontent all the time that I was inside her room. She flew right up to me at the nest to see what I was doing.

Since there had been no egg in the nest the previous evening and as the female had not spent the night in the nest-box, the egg must have been laid either in the early morning or forenoon of 11th June. As the female was in the nest-box all through the day of the 11th, except when eating outside, the incubation must have started as soon as the egg was laid. The following day I did not see her when she came out to eat and, as I naturally did not want to drive her out of the nest-box to see if she had laid another egg, it was not until the 13th June that I was able to ascertain that two eggs were present in the nest.

During the incubation the male bird sat almost continuously on a branch close beside the nest-box. He would occasionally stretch his

head to have a look, but he was never seen to enter the nest-box. He therefore never relieved the female during the incubation, neither did he give her food during this period.

On the other hand, he displayed diligently for her in the neighbourhood of the nest, partly in the usual manner, with expanded fans and tail-wires erected over his back, and partly, on many occasions, in the inverted position. He also repeatedly sat on a branch in front of the nest-box and vibrated with expanded wings directly outside the entrance hole, so that the female could not avoid seeing his courting.

On numerous occasions he sang his bubbling song right outside the nest-box while the female was incubating. When she came out to eat or to take a bath, he took the opportunity to look at the eggs and, later at the nestlings, through the entrance hole.

As part of my preparations for eventual breeding I had placed a bowl of finely crushed shells in the King Bird's room. Before laying her eggs, I had often seen the female eating these shells, but during the incubation period I never saw her swallow any pieces of shell when she came out to eat. After the eggs were hatched and the young birds were in urgent need of calcium for bone-formation, she ate the shells several times a day.

During the incubation period the female came out three or four times a day to eat. As a general rule, she also took a bath once a day and preened her feathers very carefully. The length of her visits to the feeding place varied from a few to forty-three minutes, which was the longest absence from the eggs that I observed. On that occasion the female, after she had fed, had a thorough bath and then preened her feathers for such a long time that both the male bird and I began to be nervous about the eggs. All the time the male sat beside the nest-box and repeatedly uttered his call of enticement: *a-a-a-a-a* (pronounced as in English) when she seemed in no hurry to return to the eggs.

I had not seen the birds mate, and I dared not take the eggs out of the nest to see if they were fertile. It was therefore with eager expectation that I waited to see if there would be any results at the time I had estimated.

On the morning of 28th June, after seventeen days, the eggs were still unhatched. At 3 p.m., when she came out to feed, I again inspected the nest-box and to my great joy found a newly-hatched, dark red little thing and one egg in the nest. The egg-shell was not in the nest but was found at the other end of the aviary.

I immediately went out to find fresh "ants' eggs" (more properly the pupæ of ants enclosed in their cocoons), which are the finest food one can give to an insect-eating bird. In an ant-heap about 10 km. from my house I succeeded in obtaining a good portion, which the female readily consumed.

At 7 o'clock the following morning I looked into the nest-box and



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CICINNURUS REGIUS REX (SCOPOLI), MALE.

A rather unusual form of display, sometimes a continuation of that shown on Plates 2 and 3.

[To face p. 120



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CICINNURUS REGIUS REX (SCOPOLI), MALE IN DISPLAY.



[Copyright] [Sten Bergman]
DISPLAY ATTITUDE OF *CICINNURUS REGIUS REX* (SCOPOLI), SEEN FROM
BEHIND.



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THE USUAL COURTSHIP ATTITUDE OF *CICINNURUS REGIUS REX* (SCOPOLI),
THE MALE TAKING POSITION IN FRONT OF THE FEMALE WITH OUT-
STRETCHED QUIVERING WINGS.



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YOUNG KING BIRDS OF PARADISE IN THE NEST. ONE IS FIVE, THE OTHER
SIX DAYS OLD.



Copyright]

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TWO PICTURES OF YOUNG *CICINNURUS*, FOURTEEN AND FIFTEEN DAYS OLD,
IN THE NEST.



pyright]

[Sten Bergman

FEMALE *CICINNURUS*, APPROACHING AND FEEDING HER YOUNG, WHICH
IN THESE PICTURES ARE TWENTY-ONE AND TWENTY-TWO DAYS OLD.



YOUNG *CICINNURUS* NINETEEN DAYS OLD.



Copyright]

FEMALE *CICINNURUS* WITH HER YOUNG OUTSIDE THE NEST, WAITING FOR
THE REMOVAL OF DROPPINGS.

[Sten B.

found that the other egg also had hatched. It was evident, therefore, that the second egg was laid one day later than the first.

When the female returned to the nest-box, after I had visited it, I could see through the large entrance-hole that she regurgitated food from her crop to feed her young. During the whole feeding period she fed her young in this manner.

Apart from fresh ants' pupæ the family were given the following food: chopped yolk of hard-boiled egg, fresh raw meat in very small pieces, finely-chopped apple, boiled rice and finely-chopped tomato, soaked raisins, small mealworms, small live grasshoppers, and fresh whortleberries.

The fact that the eggs were hatched during the summer considerably facilitated the feeding problem. I was able to obtain fresh ants' pupæ, live grasshoppers, and fresh whortleberries. Six months before the breeding I started to give both birds daily a portion of thawed deep-frozen ant pupæ.

When supplied with food the young emitted a suppressed, feeble, peeping sound, rather like small mice. The nestlings had smooth, naked bodies and were blind. All the young birds' droppings were swallowed by the mother. When the delicate young birds would not open their beaks she touched their heads very carefully with her bill.

On the fifth day I saw the young open their eyes for the first time. Their gapes then were vivid yellow. When they were a week old I happened to open the front of the nest-box and swung it to one side. After a moment's hesitation the female fed her young just the same. Each young bird was usually given three to four regurgitated portions at one time.

Every day I released a number of small grasshoppers in the King Bird's room. The female caught them and, after she had pulled off their legs and swallowed them, regurgitated them to feed her young. When the young ones were eight and nine days old respectively, she would feed them while sitting in the entrance hole, stretching towards them and the young towards her.

It was evident that the female selected the food offered to her young. Once I watched her standing beside the young and regurgitating the contents of her crop when a whortleberry appeared. She re-swallowed this and regurgitated a mealworm instead. This she placed well forward in her beak and stuffed it into the gape of one of the young. Thereafter she regurgitated again, brought up a whortleberry, re-swallowed it, and instead regurgitated another mealworm, which she gave to the other nestling.

Since the young birds' droppings never showed any trace of blue colouring, it is obvious that the female did not feed them with whortleberries, though she ate these berries herself several times a day.

When the young birds were twelve days old nearly all their feathers

were still in their quills, which were bluish grey in colour, though one or two wing feathers had begun to sprout and these were brown. When not asleep or feeding the young birds spent nearly all their time preening their sprouting feathers.

At the age of fourteen days all feathers, both on the upper and underside, had sprouted. During this latter time the female had fed her young almost exclusively on grasshoppers. When the young were fourteen days old I saw, for the first time, the female emerging from the entrance hole with the nestlings' droppings in her beak. She then dropped them on the ground instead of swallowing them, as she had always done previously.

Between their twelfth and fourteenth day the young birds developed so quickly that one could scarcely recognize them. At the fourteenth day the whole of their upper side was brown with more red-brown on the wings. The underside was grey-brown with dark cross-bars. Their legs and feet were blue, but duller in colour than those of the parents. They could now sit like proper birds, preening themselves incessantly or stretching their legs and wings and fluttering comfortably.

When, having taken some photographs of the young in the open nest-box, I had reclosed it and had been absent for a while, I found on my return that one of them was sitting in the entrance-hole. Shortly afterwards it flew out and sat on a branch close by. I picked up the young bird and held it in my hand for a while. The female flew round about and warned very loudly and incessantly. She crept with expanded wings and tail along the ground and among the branches and leaves round me. When I moved the fledgeling from one hand to the other, the mother alighted on my head and pecked my crown with her beak, beating me also with her wings. The bird was very excited but the male merely sat calmly at a distance and looked on. He had never been observed feeding the young ones, either in the nest-box, or outside it.

The following morning both fledgelings were out and were regularly fed by the mother, as they sat on different branches. As the young were hatched on the 28th and 29th June, the eldest one had flown out on 12th July and the other on 13th July, they thus had left the nest at the fourteenth day. In the jungle they would undoubtedly have remained longer in the nest and this would have happened here also had they not been disturbed by being photographed, when the front of the nest-box had been opened.

Despite their youth, the young birds were quite sure holding on to their branches and flying to the branch for which they were aiming, although they could only fly in a straight direction, as their tail-feathers were only half a centimetre long. On the fifteenth day they could already sit on one leg and scratch their heads. Sometimes one of them would bend forward, turning round the branch and come up on the

ther side without releasing its hold, an art with which all my full-crown Birds of Paradise are experts. All of them also are capable of doing both forward and backward somersaults on their branch.

The female, after having fed the young in the nest, always waited for their droppings ; but she changed her behaviour after they had left the nest and spent the day in the open. When she had finished feeding her young she had the amusing habit of bending her head inquisitively under the tail of one of them and then sitting motionless waiting for the droppings, but always in vain !

When the young were fifteen and sixteen days old, I saw them fight each other for the first time, which also happened the next day and on several later occasions. They would peck at each other with flapping wings like small cockerels. Sometimes they would swing round the branch until one of them would force the other to loose his footing and utter down.

Every evening towards dusk the young birds began to grow restless, flying from branch to branch and from one end of the aviary to the other. It was obviously an expression of anxiety which so many birds feel in the evening, when it is time to seek a resting place for the night. At this time they uttered a cry which may be transcribed as *tjao-tjao*. A couple of weeks later they produced a flutelike complaining whistle, often uttered twice, and which later could be heard at any time of the day. When the young birds were fifty days old I heard them for the first time give their warning cry, which was reminiscent of the parents', although it was not so harsh.

At the twenty-fifth day the young birds' appearance may be described as follows : beak, dark horn-coloured, lighter at the base. Iris, grey-brown. Upper parts of the head, brown tinged with russet. The back, grey-brown. The wings, grey-brown like the tail ; the wing feathers decidedly darker brown. The greater wing-coverts and outer webs of the primaries red-brown. The underside, light grey with dark cross-bars, curved on either half of the underside. Closer dark cross-bars on the under tail-coverts. A light bar immediately above the eyes, and over this a dark spot. The chin, grey-brownish yellow with small descending streaks and points. The gape vivid yellow. The inner anterior part of the lower mandible and its borders, yellowish-green, as also the upper mandible. The legs and feet were blue, paler than the female's.

At the twenty-fifth day the young birds' tail feathers were approximately 3 cm. long. At this age they were fed every day with whortleberries, which, as mentioned before, were never given to them when still in the nest. Grasshoppers now formed a very substantial part of their diet.

At the age of one month the young birds' tail feathers were nearly as long as the female's. The young ones were much lighter on the under-

side than the female. The mother still fed them and when they begged for food they uttered feeble cheeps whilst fluttering their wings.

The male's moult began by casting one of his tail-wires on 18th June and the other on 19th June, while the female was incubating. The female started her moult on 10th August, when the young were forty-one and forty-two days old.

When the young birds were nearly two months old they changed their feathers on the sides and top of the head, and the entire body acquired a pure grey colour. They had also grown new feathers on the under parts, where the dark cross-bars, especially on the flanks, were strongly marked. These bars were broader than in the female, which was generally browner on the under parts than the young ones. The greater wing-coverts, the primary coverts, and the outer webs of the primaries were vivid red-brown.

As I write these words the young birds are three months old. Like their parents they are both in splendid condition. They feed themselves with all the food they get, but the female gives them a titbit now and then.

The male has now almost completed his moult and is extremely elegant. It is only the tail-wires which have not yet reached their full length. The fans are not yet full grown either. Feeling that he has regained his splendour he has started to sing and display. The female has completed her moult of all the feathers on the neck and head, and has also grown new feathers on the underside.

It now remains to be seen whether my King Birds will repeat the breeding.

As far as I know this has been the first successful attempt at breeding that has ever occurred with a *Cicinnurus* held in captivity.

* * *

Grateful acknowledgment is made to E. J. Brill, Leiden, publishers of NOV GUINEA, for the loan of the blocks of the illustrations of this article.—ED.

MALACHITE-CRESTED KINGFISHERS

(Corythornis cristata)

By J. M. SPENCE (Port Elizabeth Museum, South Africa)

A nest containing five young Malachite-crested Kingfishers was found near Port Elizabeth on 19th January. It was about 10 feet up on a river bank, and had a tunnel about 12 inches deep, the actual nest cavity was about six inches in diameter and extremely foul smelling. The young were estimated to be about three weeks old. They were covered with feather sheaths, some of which were already splitting to reveal the blue feathers on the back. A week later all the sheaths had vanished and the birds were fully fledged. Their droppings were very liquid and quickly absorbed in sand. When first taken from the nest the young would defecate in all directions, and if the droppings happened to fall on the feather sheaths they would just run off, thereby keeping them quite clean. As they grew older the chicks would back away from the others and deposit the droppings well away from them.

Three of the young were taken and hand-reared; they thrived on strips of fish as well as ten to fifteen small whole fish per bird per day. When fed whole fish they would throw up a cast of the scales and bones.

For the two days after they were feathered the young birds made no attempt to fly, then on the morning of the 28th they jumped one by one to the edge of their box and flew strongly around the room. Needless to say, they were immediately caged. The next day they started to take an interest in any food that accidentally fell to the floor while they were being fed, but made no attempt to pick it up. The following morning a dish containing some small live fish in shallow water was placed in their cage. Although obviously interested, they made no attempt to catch any until the 31st. Next day they were taking live and strips of fish. I found that raw fish is rather inclined to come to pieces in water, so strips of donkey heart were tried; this proved very successful, and they took to it without any trouble. They were not hand-fed after they were five weeks old.

They are great bathers, and if not given a dish of clean water each day they use the feeding dish to wash in. Their quaint habit of bobbing their heads up and down was obvious from the day they could fly, but they very seldom raise their crests.

They have two methods of "catching" their food, one by diving either from a perch or hovering above the food or else, by alighting on the edge of the dish and pecking the strips of food out. These are usually thoroughly "killed" before eating by being beaten on a perch. If the food is small fish they are always swallowed head first.

Although they are not as brightly coloured as the adult, they are nevertheless very beautiful, having the area between the eye and lore a light buff. The cheeks and breast are dark grey-brown, with the throat and crown as in the adult. The abdomen is a lighter colour orange than the flanks and shoulders. The rump and upper tail coverts are bright metallic blue, while the mantle and back are bright metallic greenish-blue. The primaries are black, and the secondaries and coverts dark blue with bright turquoise spots. The feet and legs are orange underneath and grey above, while the beak is black with a white tip.

As you can imagine, they are very interesting and beautiful little birds, and make a wonderful addition to our fast-growing collection of live birds.

* * *

FIRST BREEDING IN CAPTIVITY OF THE SEVERE MACAW

(*Ara severa* (Linnaeus))

By OTTO HIRTHE (Copenhagen)

(*Translated from the Danish by C. af Enehjelm*)

In 1953 I bought a nice pair of Severe Macaws from the animal dealer C. H. Krag, of this town. The birds were almost identical, only the red colour on the forehead of the bird believed to be the cock was somewhat more pronounced. The birds seemed very attached to each other, so I thought they must be a true pair. I put them in a compartment of my largest aviary. This consists of a long brick building 60 feet long, 8 feet wide, and 8 feet high. The house is divided into eighteen compartments, each approximately 3 feet by 5 feet, with a 3 feet passageway running along the back of the house. Each compartment has an outside flight, approximately $3\frac{1}{2}$ feet wide, 20 feet long, and 7 feet high. One box was hung in the shelter and another in the outside flight. The boxes were made of $1\frac{1}{2}$ inch boards, approximately 1 foot by 1 foot and $2\frac{1}{2}$ feet high. On the bottom of the boxes I placed a layer of moist earth, and on the top of this a layer of peat-moss, about 6 inches deep in all. Neither of the boxes was used for sleeping. In spite of the very cold winter, 1953-54, the birds spent all day in the flight, even the cold nights did not seem to hurt them in any way.

The food consisted of sunflower seed, various millets, peanuts, and groats. They also got all kinds of sweet fruit, apples, oranges, grapes, etc. Strangely enough the birds did not seem to appreciate bananas. Raw carrot was given freely, and should, in my experience, always be fed to nesting parrots and parrakeets. Also sprouted oats and

outed spray millet were given daily. The birds did not take ordinary green food, as usually given, with the exception of the yellow dandelion blossoms, which they took readily, but not the ripe heads. The macaws seemed to thrive excellently on this food, and at the end of May, 1954, I thought that the birds would start nesting, as they seemed to be interested in the nest-box. Things, however, went differently. I give fresh branches in the flight, and every time I bring new branches, the Macaws first bite off all the leaves, then the twigs, and finally, gnaw off the bark. Macaws should always have fresh branches for gnawing. This does them a lot of good and keeps them occupied.

At the beginning of August the birds started to feed each other, and I also saw a single attempt at mating. It really was a true pair. On the 6th August the hen disappeared into the box in the outside flight and the cock spent most of his time in the neighbourhood of the box. He also visited the hen several times a day and slept in the box every night during the period of incubation. A nest inspection was very difficult, as I was usually attacked by the birds. On the 14th of August I took a thin lath and gently pushed away the birds from the centre of the nest, and an egg was visible on the bottom of the box. When checking again on the 24th of August, I saw three eggs, and these comprised the whole clutch. Apparently the eggs were laid every other day. I did not inspect the nest again until the 12th of September, when I saw a young bird, which seemed to be newly hatched. Three days later, when checking the nest, I found another young one lying dead, apparently crushed under the mother. The third egg was fertile, and was removed. The remaining young one thrived excellently. Besides the ordinary food, I gave eggfood (hard-boiled egg with biscuit), and boiled rice with milk and sweetened with sugar and different sweet jams—this food, by the way, also being given at intervals all the year round. The youngster left the nest on the 18th October, beautifully feathered, and was greeted by the parents with loud cries. A little later the young bird flew with the parents through the long flight, the parents taking good care of it. The bird appears to be a cock, the red patch on the forehead being as big as that of the old cock. It is delightfully tame, and takes food from my hand. The incubation period of the Severe Macaw is obviously 25–28 days, and the young birds leave the nest when about 7 weeks old. They are fed by their parents for quite a long time, but are independent about six weeks after leaving the nest.

In 1955 another young bird was bred, and in 1956 three. These were exhibited at the large bird show at Copenhagen in November, and were awarded the 'Sluis' cup for meritorious breeding.

* * *

NOTES ON THE DARK FIRE FINCH

(Lagonosticta rubricata)

By C. J. O. HARRISON (Tooting, London, England)

These notes are an addition to the previous article (AVICULTURE MAGAZINE, vol. 62, 1956, p. 128), and complete the study on the Fire Finches commonly available to aviculturists in this country.

Appearance

The Dark Fire Finch (*Lagonosticta rubricata*) is also known as the Blue-billed Fire Finch, though this name is usually applied to the West African subspecies, which is the one most frequently imported and the one on which these observations were made.

The cock is dark, perhaps dull, scarlet on the head, breast, and belly and the mantle is a dark slate-grey. In this subspecies the dark grey extends on to the nape and crown, but in others the head may be entirely red. The wings are a similar colour to the mantle, but perhaps a little browner. The rump is scarlet, as is the base of the black tail, while the under tail-coverts are black. There is a faint white rim to the eye, and the bill is steel-blue. The hen is pinker than the cock on head and breast with a small area of buff on the belly. The general shape is that of a small squat bird with a narrow head and prominent bill.

This species is unfortunately being widely sold and exhibited as another species—Jameson's Fire Finch (*L. jamesoni*). At one time the two were considered to be related subspecies, but they are now separated. Jameson's Fire Finch is pinker on the head, light red on the breast, and brown on the back: but the principal distinguishing feature is the shape of the second primary feather. The first primary in both species is vestigial, and what appears to be the first is in reality the second. In Jameson's Fire Finch this latter feather tapers a little towards the tip, but in the case of the Dark Fire Finch it is cut away on the inner web towards the tip, so that the feather narrows suddenly and the terminal portion is very slender. This feature is constant in the different sexes and plumages.

General Behaviour

It is a rather nervous and furtive bird, resembling the Bar-breasted Fire Finch (*L. rufopicta*) in its habits. Like that species it has a crouching posture. If alarmed it tends to hide, and if free in a room will disappear into the darkest corner or under furniture, and remain still and silent. I found that it quickly learnt to find its way around a room. Even before a nest had been made it showed preference for roosting in

box. In spite of its furtive manner I found it an aggressive species. When two cocks were put together one would chase the other continually, one of the birds (I am not sure which) uttering a low, soft "tuc" note. When I put one with Senegal Fire Finches (*L. senegala*) and Lavender Finches (*L. caerulescens*) it dominated both.

Call-note

The call-note is low-pitched, nasal, and slightly harsh—"kyew" or "kyah". It has a wide range of expression, from a soft, subdued note used between a pair when feeding or on the move, to a loud, harsh version used in periods of excitement or isolation.

Alarm-note

This differs in form from that used by the Senegal and Bar-breasted Fire Finches. It is abrupt, similar to theirs, but higher in pitch, and is repeated in a rapid series that run together to form a single rattling trill. The pitch is variable, becoming higher as anxiety increases. It is accompanied by a crouching posture similar to that of the Bar-breasted but with the head raised on a rather thin neck. The tail is held to one side, half-spread and jerked sideways at each call.

Song

The dangers of generalizations based on a study of too few specimens were brought home to me with this species, for the first cock that I possessed had a song which consisted merely of a long-drawn toneless trill on a single flat note. It was only with subsequent birds that I heard the more normal song. The cock of a nesting pair did not sing when the hen was on the nest, but used instead, low-intensity alarm-notes together with a more melodious form of the call-note.

When the hen died the cock began to sing immediately and persistently. The song was melodious though generally high-pitched, surprisingly loud, and consisted of short phrases frequently repeated. During one period I timed it and found that it consisted of phrases $\frac{1}{2}$ – $2\frac{1}{2}$ seconds long, uttered at intervals of 5–6 seconds. In volume and pitch it reminded me of a Robin's song, but the style was mock-lightingale. A typical phrase would consist of the rapid repetition of a note, seven or eight times; but there were frequent changes of pitch between phrases, suggestions of crescendo and diminuendo, and sometimes a short descending cadence. Once or twice I did hear a short trill reminiscent of the first cock's song.

Nest-call

This was heard frequently during, and just after, nest-building. It was a faint persistent clucking note repeated with great rapidity.

I was not able to compare it directly, but would have said that it was lower in pitch than the Senegal Fire Finch's call, which is in turn lower than the Bar-breasted's.

Display

This is similar to the display of the Bar-breasted Fire Finch. The cock holds a piece of grass or a feather by its tip. It stretches very straight upright with head thrown back and head and neck feathers sleeked down, while the belly feathers are a little fluffed and the tail half-spread. The movement consists, as in the other Fire Finches, of a series of vigorous upward jerks, usually in repeated sets of four bobs. At each jerk there is an upward movement of the bill and in many, possibly all, cases the head is turned alternately half to one side and then the other, so that the grass or feather appears to be waved jerkily from side to side while the bird is bobbing up and down. There does not appear to be any special movement at the completion of the display. I did not notice any specialized flight of the cock while carrying display material.

Unmated cocks showed what I took to be an undirected display homologous with the "stip" display in the Senegal Fire Finch. In it the bird had a rather tense posture, upright, with head raised. It continually repeated a single note which I called a "squelch" note since it reminded me most of the sound when air is squeezed out of a wet rubber sponge with a rush of tiny bubbles, and was also reminiscent of the "fwit" of a thin twig swished through the air. Each note was accompanied by an upward movement of the bill, and terminated in a subdued click.

I was surprised that it did not appear at the end of the display of the paired cock. When the hen died the cock began to intersperse its song with periodic repetitions of the note. Finally, about two weeks after the hen's death, it picked up a grass-stem and indulged in a momentary display during which I was able to detect that the note occurred, with the lifting of the grass-stem to one side or the other, at each upward jerk of the bird; but it was normally masked in my cages by the heavy thud of the bird's feet on the perch as it bounced up and down.

Other postures

When the pair were first put together there was a certain amount of what appeared to be aggressive behaviour. I thought for a few days that I might have two cocks. Both birds would take up similar postures side by side, with neck stretched straight upwards, head thrown back and bill raised, while the tail was cocked and half-spread. In this position they would pivot from side to side, the bill-tips occasionally touching as though one bird was parrying the thrust

the other. This occurred not only in the pair-formation period, also in the early stages of nest-building.

ting

Within a few days of being placed together a pair built a nest in a cardboard box that had been put up for that purpose. The nest was of coarse grass and leaves, and lined with feathers and fibre. In the other Fire Finches the cock brought all the material and built the outer, rough shape of the nest, while the hen lined the nest with material brought by the cock. In this case the hen began to work before the outer shape was complete.

script

These notes complete my observations on Fire Finches to date. It will be seen that they are, with the exception of the Lavender Finch, very similar species, with distinct differences of song and other variations of display and calls that serve to illustrate both their relationship and the differences which enable them to preserve their specific identity.

If it should be asked why they appear in these pages I would plead that it is only through a knowledge of a bird's life and behaviour that we can understand how best to keep it, and that it is only through culture that it has been possible for the observations to be made. Detailed studies on these species in their natural habitat are still lacking, and I hope that these notes will be of some value to future students.

* * *

BREEDING ZOSTEROPS

By A. A. CLARENCE (Parkstone, Dorset, England)

Of my birds, I think a pair of Indian Zosterops has given me as great pleasure as any. This, I say, even though I have an Indian Llama who on many a warm night has charmed the silence with notes that would intrigue a Nightingale.

The Zosterops arrived in the late spring and were liberated into an aviary considered suitable to their needs. Luckily the weather held out for a considerable time and they did not appear to find the English climate anything unusual. In Northern India, the sun deals its stroke by day, and it can be cold to freezing at night.

The aviary, 15 feet long by 4 feet wide and 8 feet high, was built against a very old brick wall. This was riddled with crevices and holes made by the hand-cut nails of former generations. They formed ideal

hide-outs for spiders and other insects. The wall faced south, and the aviary was also protected from east and west winds. An apple tree sapling, self-sown, grew tight to the bricks. Its branches radiated and pressing hard against the wire roof, formed a canopy of leaves which effectively kept out rain.

For those who have not seen a Zosterops, let me say that they are small, short-tailed, insectivorous birds, about the size of an English Wren. Their colour is a warm grey-green with a grey-white stomach which merges into yellowish-green on the breast and lemon-yellow under the beak. The eyes are their most arresting feature. These are bordered with white rims, which have earned them the name Spectacled Zosterops. Knowing nothing of the nesting habits of these active little birds, I gave them soft, dry meadow-grass and hay. In due course they became interested, and wove the hay into a rough bundle between the fork at the end of a horizontal branch about six feet above ground.

Adjoining this aviary was another, but of larger proportions, being 40 feet long, 8 feet wide, and 12 feet high. It contained some Chinquapin Pheasants, a pair of Senegal Touracous, a few parakeets, and also a pair of Zebra Finches. At the partition top, a strip of wire allowed the inmates to look into the Zosterops' aviary. The Zebra Finches appeared to be fascinated by the "goings on" of the Zosterops and were desperately anxious to get a closer view of the nest. At last they discovered that a heaven-sent mouse had enlarged a hole where the wire adjoined the wall, and through this they squeezed.

I don't know what goes on in the minds of birds, but these Zebra Finches had fully made up their minds long before they passed the wire netting. In no time they had that bundle of hay torn to shreds, and were preening themselves on a good day's work. You could almost hear them say "Good-bye to all that"! Later, finding seed only in a trash cage, they were soon caught and transferred elsewhere.

It so happened that two little French poodles were being clipped for show at that time. I threw a couple of handfuls of their brown curly hair into the aviary. With evident delight, the Zosterops seized upon it, and set to work to create a masterpiece of construction. Choosing as before the flat fork at the end of a branch about 3 feet above ground, they tightly wove a small, deep cup as neat as their first effort had been ragged. It was interesting to note that this time the nest was not visible from the next-door aviary. It hung under the fork and was bound to it by two hinges, each about an inch long. Some small feathers were used for lining, and two diminutive, blue-green eggs were laid. These could be seen with the aid of a candle through the wire, to which was attached a small looking-glass.

The little hen sat deep in her cradle, showing only the tip of her beak and tail, while one beady eye, made very visible by its white

pectacled rim, missed nothing that passed. She had the delightful habit of pulling a solitary large white feather over her back when the weather was cold. I do not know exactly how long the incubation took, as she sat close and gave little or no chance of looking into her nest. However, in a seemingly very short time, about a fortnight, she was off hunting for insects.

Two children gathered ant-eggs from under the stones which bordered the paths of the garden, and swept the hay-fields with butterfly nets, catching quantities of flies, etc., from the grass tops. At first the two babies looked like black spiders at the bottom of the nest. They grew fast, and no parents could have been more zealous in caring for their wants. Eventually they left the nest as two grey-green balls of fluff, and were coaxed by their parents to the top of the apple tree and on to the sleeping perch. With the two chicks between them, they made a charming picture. Later on they placed one baby between them—the other had to take an outside seat. Somehow I think that the favoured infant was the hen. It appeared to be smaller.

When the youngsters had grown to full size, and were able to fend for themselves, the parents decided to build a new nest, and pulled the old one to pieces. The cock, however, apparently also decided that he could not tolerate another of his own sex in the aviary, and unseen by anybody, he slew his son, reducing his pretty young head to a raw skull. His daughter continued to live and sleep between the parents as before.

Unhappily the weather changed, and they apparently decided that the conditions were unfavourable for building, this much to my regret, having just bought a colour film.

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BRITISH AVICULTURISTS' CLUB

Meetings and dinners during the 1957-58 session have been arranged for the following dates :—

9th September, 1957
11th November, 1957
13th January, 1958
10th March, 1958
12th May, 1958

Will members please note that in future the Meetings will be held on the second Monday in the month, *not* Wednesday as hitherto.

ARTHUR A. PRESTWICH,
Hon. Secretary.

BREEDING THE STAR FINCH OR RUFICAUDA

(Bathilda ruficauda)

By NICHOLAS GRAVEM (Mill Valley, California, U.S.A.)

Of the so-called Australian grass-finches, I personally believe the Star Finch or Ruficauda (*Bathilda ruficauda*) has been rather neglected as an aviary subject and particularly as regards its breeding. Here in California, imported Stars are plentiful enough ; however, aviary-bred birds are sadly scarce. I understand that this same state of affairs also exists, more or less, in Britain. Perhaps a few remarks on breeding these finches, over here, may be of interest.

I breed Stars and Gouldians indoors in cages measuring about 24 by 18 by 15 inches deep. These cages are built in batteries of four in a unit and are truly box-cages with only the fronts open. I have never known Stars use a nest-box like Gouldians ; and they are furnished with one of those tiny, wooden-barred canary travelling-cages, with the bottom knocked out, and fitted within the cage on its side.

It has been my experience that these birds generally, as Gouldians, come into condition and breed during our winter months, going into post-nuptial moult in our late spring or early summer. However, I have found that Stars are very much more flexible than Gouldians with regard to adapting their breeding cycle to the spring and summer of our northern hemisphere.

After mating (by "mating", I mean pairing, not coition), the cock proceeds with most of the work of nest-building, the hen assisting to a minor degree. Compared with a Gouldian nest, this is a very neat piece of work. The nest, built within the canary travelling-cage, is a globular affair with entrance in the side and is usually started with the coarsest material at hand and then receiving an inside lining of fine dry grass and (supplied) feathers. "Egg sandwich" architecture—so frequently employed by over-zealous Zebras and less frequently by frustrated Gouldian cocks—is seldom resorted to.

Three to five white eggs seem to be the rule, incubated for some twelve or thirteen days. Very little egg-binding seems to occur with Stars, even when breeding is controlled in small cages affording so little exercise. (Gouldian hens, of course, are rather prone to this complaint, and I find that if a hen of this species becomes egg-bound and, more particularly, if she reabsorbs the egg instead of expelling it, egg-binding will always recur and the only thing to do is to retire that particular hen from the breeding-cage.)

Diurnal incubation is usually shared by cock and hen, with the hen alone incubating at night ; though in occasional pairs both will occupy the nest at night. The incubation patch in the median apterium of the hen is not as easily seen as it is on the abdomen of, say, a hen Gouldian.

I believe cocks of the genera *Bathilda* and *Poëphila* are without this hatch—even though they do a large amount of daytime incubating—and perhaps this is why these cocks incubate only during the day and the hens at night when greater heat is required to keep the eggs warm. Both parents also share in brooding duties.

Upon hatching, the young are fed by both parents by regurgitation, with the cock perhaps doing more of the feeding as the nestlings grow, both cock and hen usually being model parents. I believe insect fare is necessary, or desertion will result. I use cut-up mealworms : one worm three times a day upon hatching and increasing the number of worms by one each day until they have fledged. This is along the lines suggested by Mr. Brooksbank in his excellent book *Foreign Birds for Garden Aviaries*. Mealworms are used as a matter of convenience and undoubtedly any number of other insect forms would also fill the bill. I have not found mealworms overheating to the parent birds or otherwise objectionable, at least not while following the rationing schedule as above. Millet sprays are before the birds at all times ; soaked sprays when feeding young. I have had no real success with egg-food, bread and milk, sponge cake, etc., in regard to nestling grass-finches.

The basic seed diet consists of about three-quarters small canary mixed with one-quarter white millet, shaken with a little C.L.O. Most so-called finch seed mixtures are predominantly millet ; mine mostly canary. Also available at all times is a supplement mixture of more or less wild seeds that consists of : water-grass, sweet sudan (red and yellow), brassica, kohlrabi, lettuce (black and white), clover, ryegrass, and phalaris. This latter gives the birds, I believe, more than enough variety. Cuttlebone in its original form is not given. Instead, a mixture of ground cuttlebone, ground oyster shell, and ground boiled egg-shells, in equal parts, with a bit of flaked charcoal added, is supplied. The only green food offered is the small, young shoots from planted rape seed. I am successful with this diet ; and I am sure other aviculturists have equally sound diets, as well as successful systems of breeding and management for grass-finches. I don't believe in dogmatic ideas in reference to things avian.

I leave young Stars with the parents as long as possible after leaving the nest, but still manage to get two nests per pair (infrequently three) per year. The young, upon leaving the nest, roughly resemble young Gouldians, but with darker bills, and completely lack the papillæ-like spots of colour in the malar region, as possessed by the Gouldians ; but, before leaving the nest, the young Stars have well-developed white areas at the commissural point (angle of the mouth), as well as coloured mouth linings. Incidentally, young Stars have quite dark toe-nails compared with the lighter colour of tarsus and toes. Sexing of young prior to the postjuvenal moult is considerably more difficult than with Gouldians (in which case the young hens exhibit darker bills than the

cocks) ; however, the fledged male Stars very soon attempt their small warble of a song.

Young Stars bathe almost immediately upon quitting the nest, unlike Gouldians, which I find a bit reluctant to bathe. (However young Gouldians placed with young Stars soon imitate the latter and bathe several times a day ; but when separated from the Stars, these ablutions soon taper off. This would indicate that their innate bathing behaviour can be readily accelerated by visual stimulation.)

One drawback with aviary-raised Stars is that they almost always tend toward xanthochroism ; that is, the red feathering is replaced with yellow or yellowish, quite unlike freshly imported specimens. Most aviculturists claim, I believe, that this is due to a dietary deficiency and particularly as regards live insect food. However, as red in feathers results usually from chemical substances (carotenoids) taken with green stuff, I wonder if live food has any bearing on the matter. I have heard that soya bean, in some form, has been successful with Tanagers in this regard.

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THE STORY OF A LAPWING

By A. A. CLARENCE (Parkstone, Dorset, England)

Some years ago I was at a partridge "shoot". It was of the "set-piece" kind : every stand marked, with its number embossed in black on a large white metal plate, which was fixed to a rod and stood about 2 feet above ground. At the first stand of the day my position was near the corner of a high-hedged field. There I was surprised to see a Plover standing motionless. I soon realized that it could not fly and without difficulty caught it. I was astonished when I saw that it had only one wing—the other was missing at the shoulder. It had been cut off "clean as a whistle". The skin had drawn together over the bone and there was no blood. A surgeon could not have done a neater job.

I put the Lapwing in a gamebag and passed it to a farm-hand, who was acting as my carrier. This youth collected some worms and gave them to the bird, which was very hungry. At the last stand of the day I found myself in a field which adjoined the one in which I had begun the day. At the base of the number plate lay a severed wing.

No doubt the Plover had struck the plate in one of the fast swooping dives which these birds delight in during the twilight hours when, as though at a given signal, the whole world of night life awakens, and Plover, Snipe, duck, and Curlew break into a cacophony of sound, a chorus of calls, and whirring wings. On the

her hand, the Plover may have mistaken the white plate for one of his own kind, and on a tour of inspection met his Waterloo.

We put him in a rabbit hutch, well supplied with water and earth-worms. Next day he was liberated into a 15-ft. square roofless pen, which another pen of the same size adjoined. These pens were built on solid sand and were used for rearing baby pheasants. An aperture 10 inches long and $3\frac{1}{2}$ inches high was at ground level in order to allow the chicks to pass into the second pen, where grass tufts and a dead mouse or two acted as cover and bait for flies.

I knew that Lapwings were quick-eyed birds, but I did not expect this one to find the "bob hole" instantly, the exit being so well below its line of vision. Having examined the second pen it returned to the first, and never faltered or had to look for the opening. Trained Partridges would wander up and down the wire division all day and never find it.

"Mr. Pee-Weet," as he was called, soon grew tame, and flourished on the worms and insects brought to him by children, who were enthusiastic hunters on his behalf and derived great entertainment from the bobbing and bowing, which he did from the top of a box covered with turf.

The winter set in and he looked very handsome and glossy standing in this box. It was meant for him to shelter in, but he never used it.

In January there was a severe night frost; this proved more than his exposed side could stand. He was found frozen dead on top of the box, much to my sorrow and that of his young friends, who buried him in a boot box, with a wooden cross, flowers, and all!

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SUCCESES AND FAILURES OF A SCOTTISH AVICULTURIST

By TOM SPENCE (Newburgh, Fife, Scotland)

Ill-luck or bad management, I don't know which, but certainly I have not done well with breeding of birds so far this season. For example, out of about forty Ruddy Sheldducks eggs I have only eight ducklings. The fertility was poor, but there was a dreadfully poor hatch with deads-in-the-shell; and of those that hatched a fair number were murdered by the unnatural wretches of broody hens that I had bought in. I have, however, a nice strong young brood of New Zealand Sheldducks, which by their very strength must invite misfortune on them!

The only lories which have laid have either eaten their eggs or refused to sit on them, and truth to tell I am beginning to lose interest

in them. I still have about a dozen pairs and a good few single birds mostly hand-tame.

Last year I did very badly and reared very few birds. The only relatively bright spot was the "Foxwarren" Green Peafowl. The Peahen laid no less than 18 eggs before going broody, really three clutches. Of these one was clear and one was infertile because of an imperfect shell. The rest were all embryonated, but unfortunately nearly all of those I trusted to an electric incubator died in the shell. Of those left with the Peahen or with broodies, nine hatched. Had I written sooner, as I had intended, I might have been able to say that I had reared them all without loss, for until they were about seven or eight months old, I had no losses. Since then, however one was killed (by a broody), one died of "cold weather Pasteurellosis", and two developed such crippled toes that I destroyed them. The survivors, one male and four females, are all good birds.

This year the Peahen has already laid two clutches totalling 14 eggs. The first four hatched, four out of four, yesterday. They look strong, one male and three females, I should say. All the eggs so far candled have been fertile.

My little Demoiselle, a tame one, laid within about ten feet of the dining-room and seemed likely to sit well. The egg, however, was stolen, presumably by the Jackdaws that infest my place, and the shell found under a nearby tree. I was very sad at this and made even more so by the way that her ladyship followed me around as though I had stolen it. Luckily she has laid again and this time I quickly substituted a Barnacle Goose's egg, boiled in coffee and ink and splodged to simulate the Crane's egg. She took to this without demur and is incubating within ten feet of the door! If the egg is fertile I may return it to her when nearly ready to hatch, or I may be tempted to try to rear it myself. I *think* the Stanley Cranes are a pair; so do they most times and they are defending a nest area quite fiercely. My attitude is one of interest quite purged of hope or expectation. The European Cranes are still too young to breed, though they are taming nicely. I have a veritable drove (six) of Vulturine Guinea-fowl, but they are all juveniles except for one, and I can't expect anything this season, though they look in better form than any of my birds and are so tame that they follow me closely round their acre paddock.

I have quite a few ducklings of different species of Shelduck and geese, and of these I am particularly watchful over the New Zealand Shelducklings. There are also a few (precious few) baby pheasants.

Of the softbills, the Spreos finally revealed their sexes by laying three infertile clutches at the same time. I know now that I had three females. Luckily I had already a "cock" which I now introduced. He was a real "Peer Gynt" and a-man-for-all-three-of-them.

Two of them (females) laid again and there are now (about) seven young in one nest which all four are feeding. Strangely the third male has not laid again, probably inhibited from doing so by the stimulus of the young. These four get on without a sign of discord, but when I introduced a second male, a beautiful bird the "size of a blackdaw," there was a most dreadful melée, and later I took out the "bits" which I was able to blow life into and which has recovered. Of course this second "male" even though big, is almost certainly female, for I have put it beside yet another male which has espoused her" right away.

* * *

LONDON ZOO NOTES

By J. J. YEALLAND

The Toucan-Barbets, presumably so called because of the large yellow and black, though not very Toucan-like bill, inhabit sub-tropical zones in the Andes of north-western South America where there are two forms :—

Semnornis ramphastinus of Ecuador and *S. r. caucae* of Colombia. The third member of this genus is the Costa Rican Barbet (*Semnornisantzii*) of sub-tropical zones in Costa Rica and western Panama. A specimen of the first of these, new to the Collection, has been received in exchange ; it makes a particularly interesting and attractive exhibit at the Bird House.

Another bird not previously exhibited here is the Dusky Miner (*Myzantha obscura*), one of the many Australian Honey-eaters. The name used to be spelt Minah, and, of course, a better one would be Dusky Honey-eater, but there is another, *Myzomela obscura*, already known by this name.

Two White-bellied Storm Petrels (*Fregetta grallaria*) flew on board H.M.S. *Dunnottar Castle* off Ascension. The ship's cat soon killed one and the second was rescued by the wireless operator and brought to London ; it lived only a few days.

Six King Penguins were brought from the Antarctic by H.M.S. *Protector* and presented by the Captain and Ship's Company. A Cape Robin-Chat (*Cossypha caffra*) has been presented by Capt. R. S. Quincey and two Malayan Coast White-eyes (*Zosterops palpebrosa* *ureiventer*) by Mr. J. Newmark. An interesting addition to the Parrot House is a Cuban Conure (*Aratinga euops*), also known as the Red-speckled or Euops Conure.

Mr. M. Horwood collected two nestling White-necked Picathartes in Ghana, feeding them mainly, I believe, on earthworms, and a friend of his brought them to London by air. They are strong birds with enormous appetites and they are so far thriving on the insect mixture used at the Bird House and some mealworms.

Two Maned Geese, another Cormorant, various Gulls and Pheasants including four Swinhoe's, have been bred in the Gardens. The Green-winged King Parrakeets are nesting and another Swainson's × Red-collared Lorikeet has been bred. The Satin Bower-birds built a flimsy nest of twigs, bamboo and privet leaves. One egg was laid but it was broken soon afterwards. Four Greenfinches have been bred in the British Birds' Aviary where a Stone Curlew is incubating three eggs. Four Zebra Finches have been bred and there are nests of Blue Tanagers, Black-throated Cardinals, Malayan Glossy Starlings and Black Crakes.

The Snowy Owls nested as usual and eight eggs were laid. Three of these were given to a Spotted Eagle-Owl whose own eggs were infertile and she hatched all three, of which two are surviving and are now quite large. The Snowy Owl itself hatched several chicks letting them all die but one which is flourishing and growing fast. An Australian Stone Curlew that was in Mr. Spedan Lewis's collection at Leckford before the war now lives in the centre aviary at the Bird House and continues to lay one or two eggs each year.

* * *

NEWS AND VIEWS

Miss Phyllis Barclay-Smith represented the Society at the first Pan-African Ornithological Congress held at Livingstone, Northern Rhodesia, on 15th–20th July, 1957.

* * *

The Bronze Medal of the Avicultural Society of South Australia has been awarded to A. Phillips, for breeding the Red-chested Quail.

* * *

D. Lievens, Moerzeke, by Dendermonde, Belgium, has a quite exceptional pair of Mealy Rosellas. In three breeding seasons they produced 32 eggs, of which 30 were fertile and 30 young were reared: 1954, 6 and 4; 1955, 5 and 4; 1956, 6 and 5.

* * *

The Edinburgh Zoo continues to be successful in breeding Penguins. For 1956, the report is that the King laid 13 eggs from which 8 chicks were reared; Gentoo, 10 eggs, 9 hatched, 3 chicks reared; Maccaroni, 4 eggs and Ringed 2, none hatched.

The Keston Foreign Bird Farm has recently received a few pairs of rarely imported birds. They are the Crimson-rumped or Sundevall's Waxbill (*Estrilda rhodopyga*) ; Alexander's Cut-throat (*Amadina fasciata alexanderi*) ; and Abyssinian Red-cheeked Cordon-bleu (*Uraeginthus angolus schoanus*)—all native to Abyssinia.

* * *

Last year a pair of Princess of Wales' Parrakeets owned by C. Newton Capron, Lake Worth, Florida, was triple brooded ; nests of 3, 2, and 1 were reared. So far this season they have 2 young flying, with 4 in a second nest. It will be interesting to see whether they again rear broods.

* * *

Sixty-five members and guests accepted the invitation of the Council of the North of England Zoological Society to visit the Zoological Gardens, Chester, on 25th June, 1957. Mr. G. B. Groundsell, President of the Society, presided at the lunch and welcomed the visitors, and our Vice-President Jean Delacour replied in his own inimitable manner. The Director-Secretary, G. S. Mottershead, and his staff, were untiring in their efforts to make the visitors welcome, and the warmest thanks of all are accorded to them for a very enjoyable and memorable visit.

* * *

Breeding reports : E. J. Boosey, the "Keston" Senegal Parrots have three young flying : "Darenth-Hulme," the Green Imperial pigeons have one young one three weeks old ; Common Mynahs, two flying : Sqd.-Ldr. C. Everitt, Black-crested Finches, two young flying : Major V. Dilwyn Jones, Red-bellied Conure, nest of five reared : R. G. Kirkham, Peach-faced Lovebirds, "now up to the waist in them" ! : C. M. Payne, three Derbyan Parrakeets flying : Captain R. S. de Q. Quincey, Shamas hatched two young, one of which soon died ; the female was killed by a Jay and the male unaided reared the survivor until fully fledged, when the latter, too, was killed by a Jay : R. C. J. Sawyer, Roulrouls laid nine eggs which were given to a bantam ; all were fertile but being rather stale only two hatched ; one young one was accidentally killed, but the other is now three weeks old : Wassenaar Zoo, Spur-winged Plover, four eggs, all hatched.

* * *

Last year Mr. and Mrs. Eric C. Kinsey and Mr. and Mrs. William J. Heffler made an extensive European tour. During their stay in England many members had an opportunity of meeting them. They will especially be very sorry to learn that since returning home Mrs. Kinsey's health has steadily deteriorated.

The Kinseys established " *Manorin* " thirty-two years ago, and built up very considerable collections of birds, camellias, and orchids. Unfortunately, the time came when Mrs. Kinsey found the strain of supervising the collections too great and it thus became necessary to dispose of them and the property at Manor. And so, in the words of Mr. Kinsey, " *Manorin* is no more."

A. A. P.

* * *

REVIEWS

DAS BUCH VOM WELLENSITTICH. By CURT AF ENEHJELM. Edited by Dr. JOACHIM STEINBACHER. Verlag Gottfried Helène, Pfungstadt, Darmstadt, Germany. Price 21.50 DM. (approx. 36s.).

Curt af Enehjelm, Director of the Helsingfors Zoo, is well known to all readers of the AVICULTURAL MAGAZINE both for his achievement in the field of aviculture and for his articles on the subject. The " *Book of the Budgerigar* " has been produced with the assistance of Dr. Joachim Steinbacher and, as might be expected, this collaboration between two such well-known aviculturists has resulted in a most comprehensive and informative work. Every aspect is dealt with starting with a description of the species *Melopsittacus undulatus* Shaw in the wild, the history of its early importations and first breedings, and the development of the varieties from the first mutation known, in Belgium in 1872, to the countless colours which are available to-day. The chapter on housing deals fully with cages, aviaries, and flight and is illustrated with photographs, drawings, and diagrams. Advice is given on buying birds, the points to look out for and avoid being clearly given, and the author emphasizes that the cheapest bird is seldom the best. His recommendations on how to treat birds during the period immediately after purchase is particularly helpful. He also says that in buying Budgerigars it should be borne in mind for what purpose they are required, whether as a pet, for the pleasure of keeping a few birds, or for breeding. He states that, as with all breeding animals, it is better to start in a small way with first-class specimens.

In the chapter on breeding the following aspects are dealt with—choice of birds, breeding season, number of broods, pairing, laying of eggs, and brooding, young, control of nests, foster-parents, rings and the keeping of a record book, and points out the importance of the latter. There are also chapters on feeding and care of Budgerigars, moult, illness, " *French moult*," tame and speaking birds, and keeping Budgerigars with other birds. Finally, there is full information on colour breeding which occupies more than half the entire book.

There are 6 coloured plates, each depicting two varieties, by the English artist, A. Vowles and 41 black and white illustrations.

P. B-S.

WILDFOWL OF THE BRITISH ISLES. By PETER SCOTT and HUGH BOYD. Country Life, London, 1957. Price 21s. net.

There is no doubt that the group of birds popularly known as Wildfowl, which includes the swans, geese, and ducks, has become much more popular in recent years than was the case formerly, when most people thought of a wild goose or duck only as something to be shot and eaten. This increased interest is due, no doubt, to the very fine pictures we see nowadays of the various species, drawn by the few artists who specialize in the painting of these birds; and in the establishment of the Wildfowl Trust and its grounds at Slimbridge where the finest collection of wildfowl is to be seen. Very few people have an idea of the number and variety of species of these birds that occur in our own country and a book dealing with them was much to be desired. Such a book would not be of much value unless it were well illustrated, and with pictures in colour; and it must include all the species that occur in Britain.

Such a book has now appeared and we welcome *Wildfowl of the British Isles*, by Peter Scott and Hugh Boyd, as adequately filling a gap, for it contains a full description of plumage, nesting habits, and range, as well as a first-rate coloured illustration, of every species, even including some that are only occasional visitors and some, such as the Mandarin Duck and Canada Goose, which were introduced but have become established with us. There are fifteen coloured plates, some containing three or more species, all drawn by Peter Scott, and although we have seen some of these before in his very excellent reports of the Wildfowl Trust, they are none the less welcome in this compact form.

The only fault we have to find with an otherwise excellent book is the absence of an index, of which the Table of Contents does not quite make the place.

D. S-S.

THE RING. Edited and published by Dr. W. RYDZEWSKI, Croydon, England. Subscription, 1957, 16s. or 2.50 U.S. dollars.

This private publication was started in 1954 and has now attained a wide circulation in most countries of the world where bird banding is carried on. It is issued quarterly and is devoted entirely to bird banding, its aims, tasks, results, and methods, and is a useful medium for the exchange of ideas and experience. General articles on banding from various countries have been included, and also notes on trapping techniques, records of longevity, etc. Up to date eleven issues have appeared, including two for 1957. Subscriptions and requests for back numbers should be addressed to the Editor, Dr. W. Rydzewski, Altyre Road, Croydon, Surrey.

P. B-S.

NOTES

NOTES ON A COLLECTION OF PARROTS

The following notes on my birds may possibly be of interest to some of our readers. Starting with the successes :—

Roseate Cockatoos.—The cock of this pair is one of the late Duke of Bedford's split-albino Roseates and was obtained from Mrs. Clark, of Maidsmere. Last year the hen laid three eggs, and reared three beautiful youngsters, one of which is an albino. It is white where the normal is grey, its breast is a lovely pink flecked with white, giving a pearl effect, the under-wing feathers are very deep pink—nearly red. It has the red eye, a flesh-coloured beak and feet. From what records I have been able to look up, I believe this is the first albino Roseate to be reared in captivity.

Leadbeater's Cockatoos, reared three youngsters.

Blue Ring-necks, reared two youngsters.

Lutino Ring-necks, reared three youngsters.

Turquosines, reared three.

Splendids, reared one.

Illiger's Macaws, laid three eggs, all were fertile, but did not hatch.

Pileated, hatched two youngsters which lived for three weeks but died of cold when the hen stopped brooding.

Brown's, had three youngsters in the nest on the 2nd March, but all died on the night of the 15th March, when we had snow and 19° frost.

Crimson-wings, laid three eggs, two were fertile but did not hatch.

Derbyans, laid two eggs which proved infertile.

Amazon Parrots, laid two eggs which proved infertile. I am afraid the hen is too old for any further breeding successes.

An interesting happening was that three 1955 bred lutino Ring-necks developed their pink rings; two of these birds were bred by Mr. E. N. T. Vane, the other by Mrs. Clark.

At the time of writing the Cockatoo population at Mount Pleasant is as follows :—seven Leadbeater's, four Citron-crested, seven Roseates, two Gang Gangs, and one Lemon-crested.

ARTHUR LAMB.

* * *

CORRESPONDENCE

SEXING SOFTBILLS

How does one sex softbills? Raymond Sawyer returned my other Rothschild's Grackle two weeks ago, and when I put them together they looked as obvious a pair as one could imagine. To confirm this my old bird sang like mad, and they preened each other and he started breaking off twigs in a most business-like manner. Then the "hen" began to pursue the "cock" in a rather half-hearted way and he looked quite dejected. A few days ago the "cock" began to pursue the hen in a decidedly purposeful way, and later I rescued the hen from the ground, luckily before there was any real damage done to her. I still think they are a pair!! As Frost says these grackles, sing, mate, or fight, quite irrespective of sex.

TOM SPENCE.

DUNBOG,
NEWBURGH, FIFE,
SCOTLAND.

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- D. TRYHORN, 8 George Street, Heyfield, Victoria, Australia. Proposed by A. A. Prestwich.

NEW MEMBERS

The twenty-nine Candidates for Election in the May-June, 1957, number of the AGRICULTURAL MAGAZINE were duly elected members of the Society.

CHANGES OF ADDRESS

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- DAVID R. CORBETT, to 3 Strathmore Gardens, Kensington, W. 8.
- LEVIN J. CULLEN, to 106 Duff Lane, Broken Hill, N.S.W., Australia.
- R. D. H. DAVIES, to Institute of Marine Resources, University of California, P.O. Box 109, La Jolla, Calif., U.S.A.
- J. GLOVER, to c/o The Old Clergy House, Cornwood, Ivybridge, Devon.
- S. HARRAP, to c/o Box 8091, Belmont, Bulawayo, Southern Rhodesia, South Africa.
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- W. POND, to P.O. Box 10, Worcester, Cape Province, South Africa.
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DONATIONS

(Coloured Plate Fund)

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A. H. ISENBERG	15	0
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Australian Parrots in Captivity

By Dr. ALAN LENDON

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Comparative Studies on the Behaviour of the Anatinae

By Dr. KONRAD LORENZ

Translated by Dr. C. H. D. CLARKE and reprinted in the AVICULTURAL MAGAZINE by kind permission of Dr. Erwin Stresemann, Editor of *Journal für Ornithologie*. Price 5s. 4d., post free.

Studies on Great Crested Grebes

By K. E. L. SIMMONS

A paper, with illustrations by ROBERT GILLMOR, on the behaviour of the Great Crested Grebe, reprinted from the AVICULTURAL MAGAZINE. Price 5s. 4d., post free.

Published by the Avicultural Society, and obtainable from the Hon. Secretary, 61 Chase Road, Oakwood, London, N. 14.

6 Nat. Hist.

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THE AVICULTURAL SOCIETY

Founded 1894

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**Hon. Secretary and Treasurer : A. A. Prestwich, 61 Chase Road
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Assistant Secretary : Miss Kay Bonner.

Membership Subscription is £1 per annum, due on 1st January each year, and payable in advance. Life Membership £15. Subscriptions, Changes of Address, Names of Candidates for Membership, etc., should be sent to the Hon. Secretary.

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THE AVICULTURAL MAGAZINE

The Magazine is published bi-monthly, and sent free to all members of the Avicultural Society. Members joining at any time during the year are entitled to the back numbers for the current year on the payment of subscription. All matter for publication in the Magazine should be addressed to :—

**The Editor : Miss Phyllis Barclay-Smith, 51 Warwick Avenue, London
W. 9. Telephone : Cunningham 3006.**

The price of the Magazine to non-members is 5s., post free, per copy, or £1 10s. for the year. Orders for the Magazine, extra copies and back numbers (from 1917) should be sent to the publishers, Stephen Austin & Sons, Ltd., Caxton Hill, Watlington Road, Hertford, England. Telephone : Hertford 2352/3/4.



GREEN IMPERIAL AND PIED IMPERIAL FRUIT PIGEONS.

AVICULTURAL MAGAZINE

THE JOURNAL OF THE AVICULTURAL SOCIETY
AND THE AVICULTURAL SOCIETY OF AMERICA

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SEPTEMBER–OCTOBER, 1957

BREEDING OF THE GREEN IMPERIAL PIGEON

(*Ducula aenea*)

By A. A. PRESTWICH (Southgate, England)

The Green Imperial or Bronze Fruit Pigeon has a very wide distribution, being found in India, Ceylon, Burma, Thailand, Indochina, Malay Peninsula, Sumatra, Java, Flores, Borneo, Celebes, Philippine Islands, etc. There are, consequently, numerous races, as many as fourteen being recognized.

This pigeon may be common in the wild state, but it is very seldom seen in captivity in Great Britain. The Zoological Society of London received their first specimen in 1866, a second arriving the following year, with three more in 1871: other arrivals were 1878, one; 1883, one; 1884, three; 1892, one; since when there have probably been others. The only record of private ownership is the pair of the Philippine race (*D. a. chalybura*) collected in 1903 by Walter Goodfellow for Mrs. E. J. Johnstone.

Pigeons collectively do not enjoy the popularity with aviculturists they perhaps deserve. The smaller Fruit Pigeons, on the rare occasions they are imported, usually find ready buyers as the majority are so very beautiful. But the larger species, such as the present which measures 15–17 inches in length, would probably prove almost unsaleable, except to a zoo—and that is really the best place for them.

In August, 1954, a London dealer offered us five Green Imperials (their origin being unknown it was, of course, impossible to determine the race) and despite the fact we had no suitable accommodation we bought them. Fortunately, John Yealland, as on many other occasions, both before and since, kindly eased the situation by taking them on deposit at the London Zoo: and there they remained for nearly two years, until May, 1956, when they were finally transferred to our newly constructed range of pigeon aviaries. Having been at the Zoo for so long one would have thought they would have been very steady and that nothing could disturb them. But such

was far from being the case ; they were exceedingly timid and on the slightest pretext would panic, somehow "half-roll" and hang suspended from the roof of the flights—it will perhaps be remembered from past accounts that the flights of these particular aviaries are composed entirely of close-woven wattle fencing, except the roof which is wire-netting. However, they gradually quietened down and at the present time are as steady as one could reasonably expect.

We assumed that if, as we hoped, they attempted to nest it would be some time during March, April, or May. We were reconciled to the fact we had missed the 1956 breeding season and so we were not disappointed that they showed no signs of nesting during the remaining summer months. Autumn and winter passed and they appeared to be troubled not at all by the cold. At the Zoo they had had a heated house to use if they were so disposed, but with us they have only half-open shelters, facing north ; and as often as not they did not use them but roosted out. So they may be considered quite hardy.

We experienced considerable difficulty in pairing them up as in coloration and size the sexes appear to be exactly similar. Finally mainly as a result of trial and error, we sorted out what we believed to be two pairs ; the odd bird being paired with a surplus Pie Imperial.

Wooden seed-trays were provided as platforms for the expected nests, and roughly formed foundation nests of straw were added as an incentive. Straw, however, proved an unsuitable nesting material. In common with some other Fruit Pigeons this species has somewhat specialized feet, very strong with broad soles, developed to enable it to clamber about branches and so reach fruit that would otherwise be difficult of access. While indulging in courtship pursuit they frequently landed on the platforms, with the result that the straw was dragged out and scattered. Hay proved a quite successful alternative. The actual nests were of a very scanty nature—little more indeed than a few wisps of hay.

At the beginning of January we started dusting the food with powdered cuttle-fish bone—this with a view to obviating egg-laying troubles that might be due to any calcium deficiency. It certainly had the desired effect as none was experienced.

Pair No. 1. On 9th March an egg was laid in the sand at the front of the flight. It was unfortunately punctured. On 1st April an egg was laid in the sand at the back of the flight and another was found in the nest : both of these were transferred to domestic pigeons, but they proved to be infertile. A fourth egg was laid on 22nd April, but was deserted after a week or so and was removed on 3rd May. The measurements of three of these eggs were 42×32 mm., 42.1×32.6 mm. and 42.2×32.5 mm. ; they were pure white with a slight gloss.

Pair No. 2. An egg was laid on 27th April, but was thrown out of the nest and broken on 7th May. A second egg was laid on 1st June. The female settled down and as incubation progressed she became increasingly tame, eventually so much so that towards the end of the period she even allowed herself to be stroked while on the nest. Both parents spent a great deal of time on the nest. We were unable to decide whether the male was actually assisting in the incubation or whether he was merely keeping his mate company. During the three or four days prior to the hatching both hardly left the nest. The egg was found to have "starred" on the afternoon of the 20th and had hatched by next morning. The incubation period is believed to have been eighteen days. It is, however, rather difficult to determine this point with any accuracy because the female did not begin seriously to incubate until several days after the laying of the solitary egg. The nestling in down was dark rufous above and pale rufous-brown below. The female brooded it very closely, so closely in fact that it gave cause for anxiety as the weather part of the time was very hot indeed. This close-brooding lasted for about a week and may have been the reason why the young one appeared to be very slow to develop—at least by domestic pigeon standards. It then grew rapidly. Just as it left the nest prematurely a heap of straw was placed beneath to break its fall. This, however, proved to be an unnecessary precaution. It was strong and robust and by 11th July was perching on the edge of the nest, managing to reach a perch the following day and henceforward finding its way round the aviary quite easily.

On leaving the nest the young one appeared to be an almost exact replica of its parents except that it was, of course, very much smaller. It was a little less brightly coloured, with the legs and feet paler, but it had quite a high gloss on the back and wings. It thrived amazingly and was, and is, a great credit to its parents who, in their turn, at all times behaved in a really exemplary manner, even now with never a hint of spitefulness.

Food. In captivity the feeding of these large pigeons presents little difficulty: they will thrive on a very wide variety of foods. We have known one species do very well, for a time at least, on damsons and baked brown bread!

Our own staple food consists of apples, bananas, tomatoes, and dates, minced, mixed together and dried off with coarse biscuit-meal. The drying off is very important, otherwise the birds will soon become very soiled round the head, neck, and breast, and look very unsightly. We have tried several biscuit-meals and found the most satisfactory to be "Stamina" Poultry Biscuit Meal, which we put through a mincing machine. To this staple mixture we add, as available, a large variety of extras, grapes, cherries, plums, pears, pomegranates, green peas, chopped lettuce; boiled potatoes, carrots, rice; soaked

sultanas, apricots, and figs. We do not give any form of milk-soaked sponge-cake, or insectivorous food, as is sometimes recommended for some of the smaller species.

The food for a dozen Green and Pied Imperials takes quite a long time of preparing. It does not, however, need to be chopped very finely. Both these species have enormous gapes and are capable of swallowing incredibly large pieces. In the wild state they are partial to nutmeg, which they swallow whole with ease: later, when the peel has been digested, the nut is disgorged.

From the time the young one was hatched a heaped teaspoonful of "Bemax" containing a couple of drops of cod liver oil was sprinkled on the food.

Water. The authorities are still somewhat divided on whether the pigeon drinks in the wild state. There can really be little doubt that it is a regular drinker. Naturally, we provide water at all times, but as yet, have never seen one drink.

Postscript.—The young one was separated from its parents on 6th August as they showed signs of nesting again. An egg was in fact laid on 9th August and duly hatched on 1st September. The squab is at present only two days old, and much now depends on the weather.

* * *

As described above, A. A. Prestwich has bred the Green Imperial Pigeon (*Ducula aenea*). It is believed that this may be a first success.

Any member or reader knowing of a previous breeding of this species in Great Britain or Northern Ireland is requested to communicate at once with the Hon. Secretary.

* * *

KEEPING THE PALE-BILLED WOODPECKER

By J. L. THROP (Curator, Buteyn Bird Ranch, San Luis Rey,
California, U.S.A.)

There is a group of large woodpeckers found in North and Central America which are regarded as being the most impressive of all woodpeckers. Members of this group practically all fall under different genera, the only reason for calling them a group at all is their somewhat similar appearance. They are all crested and have some semblance of a white V on the back. This group contains the rapidly disappearing North American Ivory-billed Woodpecker and the Mexican Imperial Woodpecker, the largest of all woodpeckers, measuring 20 to 22 inches. These two species, due to their specialized feeding habits, cannot survive the encroachment of civilization. Other members are much better favoured, the Pileated Woodpecker and the one we are now concerned with, the Pale-billed Woodpecker (*Phoeceastes guatemalensis*) are two. Other members are found south of Mexico.

The members of this group have not often been kept in captivity. The feeding habits are so demanding that few people would assume such a burden. George and Evelyn Whitney, of Elsinore, California, did assume this challenge, and the following information was compiled in the hope it may add to the general knowledge of these magnificent birds.

George Whitney, Jerome Buteyn, and Pat Murphy took a trip to San Blas, Nayarit, Mexico, in the early part of May, 1955. They are all bird enthusiasts and the trip was one of observation with the hope of bringing something home for their collections.

A Pale-billed Woodpecker's nest was discovered a few miles from San Blas along one of the forest tracks. The nest was in an old, rotten palm tree about 16 feet from the ground. The palm had broken off at the junction of a previous woodpecker's nest. The wood was soft and pulpy. Two unfeathered young were taken; from the colour of the skin and pin-feathers of the crown, we know they were a pair. One was red and the other was black, the red-crested was the male and was also the larger. The two birds ate mealworms readily, and no meals were missed. The female, regrettably, was accidentally killed before they got home.

Coming back from Mexico, 108 degrees temperature was encountered in the Arizona desert and all the mealworms died. The whole of the last day home the bird survived on those worms.

A short while after the bird's capture several black specks were noticed under the skin. These grew quite large; one of them was incised and a large grub-like creature filled with blood was squeezed

out. Seven or eight of these parasites were removed and what future effect these might have had can only be speculated.

The bird was fed exclusively on mealworms for the first two months. By this time he ate about fifty a day in two feedings. Other insect life was tried during this time and it invariably caused indigestion. Hard-boiled egg yolk was introduced and eventually the whole of the yolk and part of the white was consumed every day. He had a liking for "mocking bird food", though objected if it was dampened. The most notable thing connected with this bird was his sensitive digestive system.

It was felt that an effort should be made to get the bird on a more varied diet, and since these woodpeckers eat a small quantity of berries and fruits in season, one soaked raisin was fed the bird. For two days he moaned and complained with a stomach-ache. A week later he was again given a soaked raisin and again he complained, but for a shorter time. The raisin was given with increasing frequency until it became a staple item. In season he also got two grapes each day, but he had to be started on these half a grape at a time and still he was upset. The tiniest piece of apple produced the same results until eventually he was eating a piece about the size of a thumb-nail at each feeding.

At one time the woodpecker got indigestion that continued for two days. The Whitneys were at their wits end trying to figure the cause. It was found that when potatoes, for moisture, were put in the bran containing mealworms the worms became toxic and the bird invariably was sick. Apples used for the same purpose caused no ill-effects nor did the flat cactus leaves. These leaves are preferred by most California aviculturists and are cut in strips and laid on top of the bran. He was very fond of bread slightly dampened with milk but this always gave him indigestion so it was given sparingly.

The moult was made gradually so the bird always looked in top condition with a fine sheen on the feathers. George thought it odd, but they never found any of the red crest feathers. In the spring the normally white areas of the bird, the wing patches, and the V on the back, turned bright yellow. George thinks this may be due to the sulphur content in the egg yolks given.

The woodpecker was given a lot of freedom in the house and became increasingly destructive until he was about two months old. At this time he attacked the wood panelled den and in a short time had a hole that soon would have gone through the wall to the outside. He was put in an all-metal cage 4 feet square and 2 feet high where he quickly adjusted himself. For preoccupation he would busily pulverize a piece of two by four wood put in his cage every few days. He disliked a small clapper bell intensely and spent much time worrying it.

George found the bird would go into battle stance, raise the crest as far forward as it would go, when he tapped the water container with

his finger. The bird would dance along his perch and his eyes would take on a glazed stare. It was definitely threatening. The woodpecker never acted this way to Mrs. Whitney.

The loss of the bird was caused after two years in confinement when the Whitneys ran out of mealworms, the principal item in the diet. When their stock got down to 500 they would order more from their dealer. The 500 reserve would last ten days, it generally took only three or four days to receive the worms but they allowed a grace period to cover any delay. This time a severe delay occurred and the worms were not sent until fourteen days after they were ordered. The Whitneys made every effort to get them from local people, but nobody carried them in any quantity and with the diminishing supply of worms the bird soon died. The loss was felt very strongly.

From the trials encountered with this bird, they feel it would be impossible to maintain a captured adult. The Whitneys plan to obtain another youngster of this group and see just how much they have learned.

* * *

BREEDING OF THE SENEGAL PARROT (*POICEPHALUS SENEGALUS*) AT THE KESTON FOREIGN BIRD FARM

By EDWARD J. BOOSEY (Keston, Kent, England)

I have always had a particularly soft spot in my heart for Senegal Parrots as I had a delightfully tame one for 21 years, and I am consequently very pleased to be able to record the successful breeding of the species here at the Keston Foreign Bird Farm this 1957 season.

It seems that this may be a first breeding. Apparently they are said to have been bred in 1886, before the Avicultural Society had come into existence, but our Hon. Secretary, Mr. Prestwich, who is I think acknowledged to be the chief authority on the subject, wrote to me saying that he had "always regarded the 1886 report as rather more than suspect".

Before the war we had a very fine-looking, and I should have said obvious, pair of Senegals here at Keston, but, although given every opportunity to do so, they never made any attempt to breed, so after we had had them for about three years, we parted with them.

Then after the war we decided to try again, this time with a couple consisting of one we had purchased and one that had been kindly sent to us by Miss Knobel. They are by no means easy birds to sex, particularly single individuals, but Miss Knobel had rightly assumed that her bird was a hen and ours fortunately turned out to be a cock. As a breeding proposition, however, they did not seem a very

promising pair owing to their extreme wildness, both of them—as they still do—dashing panic-stricken into their shelter uttering their worst slate pencil screeches, if anybody went near their aviary.

They were very secretive about their nesting operations and I personally never saw either of them taking the slightest interest in their nest-box, but, as the hen eventually disappeared and as there was no sign of a corpse in the aviary, we assumed that she was sitting. This was in May and some time later, when both birds were in the flight and dashed headlong into the shelter, we decided to shut them in and have a look in the nest-box. The inspection revealed three half-grown young ones, all of which have been successfully reared and are now flying with their parents.

The first one to fledge, which had the curious habit of frequently going back to spend long periods in the nest-box, came out about 6th July, and the other two some four days later. They are very fine youngsters, as will be seen from the accompanying photograph, which my partner Alec Brooksbank took when the youngest of them had only been out of the nest a couple of days or so.

Actually the first intimation I had that they were starting to fledge was when one morning I approached their aviary and was astonished to see a Senegal Parrot sitting calmly on a perch instead of dashing wildly into the shelter! Closer inspection of course revealed its dark eyes, but the only difference from its parents in plumage was its very dark grey crown and pale ashy grey cheeks, as is the case with the other two. Altogether I don't think I have ever seen such grown-up looking young ones—newly-fledged Blue-fronted Amazons, for instance, looking such very obvious juveniles.

The nest-box, measuring about 10 inches square by 24 inches deep with half a coconut husk fixed in the bottom, was hung up under overhead cover in the open flight.

In addition to their staple diet of sunflower, canary, hemp, and peanuts, the parent Senegals were given, while rearing their brood, a considerably increased amount of hemp and various extras. These consisted of boiled potato and carrot as well as a large cube of stale bread previously soaked in sweetened milk to which Virol, etc., had been added. These were given daily and we also offered them boiled white fish—of which my tame Senegal was so fond—but this they refused to sample, so it was discontinued. They always have spinach beet leaves and apple about twice a week throughout the year, and during the rearing period, both were given daily.

Finally, for the benefit of anyone who might not be familiar with the appearance of these small parrots, I would just add that the Senegal is green with a grey head, and with the lower breast and abdomen orange-yellow. Its total length is a little over 9 inches.



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[Alec Brooksbank

THREE YOUNG SENEGAL PARROTS (3 DAYS AFTER THE LAST ONE WAS FLEDGED)

To face p. 152.]

As described, Edward J. Boosey has bred the Senegal Parrot (*Poicephalus senegalus*). It is believed that this may be a first success. Any member or reader knowing of a previous breeding of this species in Great Britain or Northern Ireland is requested to communicate at once with the Hon. Secretary.

* * *

FOOTNOTE

Dr. P. L. Sclater, reporting on the additions to the Zoological Society's Menagerie during May, 1886, says amongst the most noticeable are: "Five Senegal Parrots (*Poicephalus senegalus*), presented by R. B. Sheridan, Esq., May 5th. Four of these are young birds bred in a large aviary at Frampton Court, Dorchester, under the management and care of the late Mrs. Sheridan. This is of interest, these Parrots are rarely known to breed in captivity" (*P.Z.S.*, 1886, 318).

In *Bull. Soc. Nat. d'Acclim. de France*, 1888, 667, the Director of the Jardin d'Acclimatation (A. Geoffroy Saint-Hilaire) says that on the 1st April, 1888, he saw a number of "Perroquets Marabouts (*P. senegalus*)" living in the open air at the London Zoo. A letter from Sclater, dated 31st May, is quoted: "We received five of these Parrots in June, 1886: as we had been assured that four of them had been reared in an open flight, we installed them in the Gardens under similar conditions. Although two of the five birds, an old one and a young one, died, it was a rather curious experiment. They passed all last winter (1887-1888) in the open flight where you saw them, without any other shelter than several wooden boxes."

I have always regarded the Sheridan event as rather more than expected, mainly because in the wild state the number of eggs is generally limited to be two. Four certainly seems to be a rather large brood, and the young may, of course, have been the product of two nests. I certainly think it more likely the four young were newly imported birds.

A. A. P.

* * *

BREEDING OF DOUBLE-WATTLED CASSOWARY

By KENTON C. LINT, Curator of Birds, Zoological Society of San Diego
California, U.S.A.

A Double-wattled Cassowary chick (*Casuarius casuarius aruensis*) was hatched on 30th April, 1957, in the Zoological Gardens of San Diego. In its history of forty-one years this is the first record of a Cassowary chick to be hatched successfully in the gardens.

The Cassowaries are the only members of the group of struthionian birds that have become adapted to life in the jungle. One of the most primitive living birds in the world to-day, this entire group has proved to be the most difficult to breed in captivity. Their heads are protected from thorns by a heavy casque and their powerful legs are fitted for crashing through tangled brush rather than for dashing at high speed over open plains. The bare portions of the face, as well as a long narrow space on each side of the neck, are brilliantly coloured in blue, red, and yellow, the variations in shading being an important factor in the separation of forms. About twenty have been described ranging from north-eastern Australia to New Guinea and some adjacent islands.

The plumage of the Cassowary is much like that of the Emu, having the same well-developed aftershaft. In structure, however, the wing is quite different from those of other struthionian birds, the flight feathers being represented by five or six hard, stiff quills. When our Cassowaries are angry the wing feathers are scraped along the fence making a loud rattling sound which warns one of their temper.

Cassowaries are fierce, pugnacious creatures, able and ever-willing to deliver stunning blows with their powerful feet. Wounded birds are treated with respect by natives in the bush and captive specimens receive watchful consideration from their keepers and must be watched constantly.

Male and female usually cannot be kept together unless in a very large enclosure. A compatible pair of adult Cassowaries is rarely seen in captivity.

We have persisted in our efforts to breed this species in captivity. The male bird and father of this baby has been on exhibition for thirty-one years. He alone incubated three eggs this season. The incubation period was recorded at fifty-four days.

* * *



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[Zoological Society of San Diego

Double-wattled Cassowary Chick, *Casuarius c. aruensis*, 4 days old
showing distinct wattles and helmet plate.

[To face p. 154.



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Male Double-wattled Cassowary, 31 years old, with 4-day-old chick, hatched in Zoological [Zoological Society of San Diego

THE IMMIGRANT BIRDS OF MAURITIUS

By BURTON BENEDICT (Floréal, Mauritius)

The aviculturist who steps ashore in Mauritius will feel very much at home, for around him he will see some of the commonest aviary birds of Europe and America. The Indian Mynah (*Acridotheris tristis*) hops along the road ; the Bulbul (*Otocampus jocosa*) and Green Singing Finch (*Serinus mozambicus*) flit about the garden ; flights of Indian Ring-necked Parrakeets (*Psittacula torquata*) wing screeching overhead ; flocks of Red-eared Waxbills (*Estrilda astrild*) and Spice Finches (*Munia punctulata*) hover about the fields, and colonies of Spotted-backed Weavers (*Ploceus spilonotus*) build their elaborate nests in the casuarina trees by the sea.

These pleasant observations may be interrupted by several reflections—surely these birds are not native to Mauritius, their very names betray their countries of origin as Africa and India. How did they reach this tiny island, barely the size of Surrey, which is some 1,400 miles from the east coast of Africa and over 2,000 miles from India ? It is difficult to imagine a Waxbill or a Mynah flying such distances over water. Clearly they must have been brought, but why ? How ? And by whom ? Wandering further afield one sees more and more of these avian immigrants. The ubiquitous House Sparrow (*Passer domesticus*) is seen in every gutter, though it is the light-coloured Indian variety rather than the one familiar to English and American cities. Driving along, Necklace Doves (*Spilopelia chinensis*) and much smaller Zebra Doves (*Geopelia striata*) rocket up before the car. Everywhere in the island the story is the same. Another question springs to mind—where are the native birds of Mauritius ?

Of the twenty-five species of birds once endemic in Mauritius only nine remain, and only one of these, the tiny, pearly Manioc-Bird (*Malacirops borbonicus*) is at all common. These little softbills, about the size of a Zebra Finch, are to be seen flitting about the garden uttering a metallic chirp. The local name, " Pit-pit," reflects this sound. The Manioc-Bird resembles the much rarer Olive White Eye (*Zosterops curvirostris*) but lacks the white eye ring. The Olive White Eye is more grey than olive, but otherwise resembles the *Zosterops* kept by aviculturists. The other endemic Mauritian birds include a small Peregrine Falcon, the Mauritius Kestrel (*Falco punctatus*) ; a very rare parrakeet, the Mauritius Parrakeet (*Psittacula echo*), which resembles the Indian Ring-neck but is rather larger ; the extremely rare and beautiful Mauritius Pink Pigeon (*Nesoenas mayeri*) ; the almost extinct Mauritius Cuckoo-Shrike (*Coquus typicus*) ; the Mascarene Blackbird (*Microscelis borbonica*), which is sooty-grey with a blackish crown ; and the Mascarene Flycatcher (*Tchitreia bourbonensis*), an attractive bird with a black head, grey breast, and russet wings and tail.

When the Portuguese landed in Mauritius in 1507 they found no human inhabitants, but a rich and varied avifauna. Most famous of these now extinct birds was the almost legendary Dodo. A living specimen was exhibited in Europe in the seventeenth century. It died in England and was presented to Oxford. Nearly a hundred years later an over-zealous vice-chancellor consigned its moth-eaten remains to the fire. Only the head and a foot were retrieved from the flames, and these rather grisly objects may still be seen at the University Museum, Oxford.

The Dodo was only one of the many birds exterminated in Mauritius by the destruction of the forests, indiscriminate hunting, and the introduction of the rat, monkey, and mongoose. Some of these extinct birds make the aviculturist wistful, particularly the Mascarene Parrot (*Mascarinus mascarin*), which was found in the neighbouring island of Réunion as late as 1845, and the Broad-billed Mauritius Parrot, a large, handsome, nocturnal bird, probably flightless, which was sketched by a Dutch traveller in 1601–1602. Only a few of its bones have been found. Another striking bird which would have graced any aviary was the Dutch Pigeon (*Alectroenas nitidissima*). It had a greyish head, dark blue body, and russet tail and was last seen in 1850.

But what of the immigrants? Some of them have fared no better than the native species. The Painted Quail (*Excalfactoria chinensis*) was introduced in the first half of the eighteenth century, but the Indian Mongoose, imported to destroy rats, has practically exterminated it along with other ground-nesting quail and partridges. Only the Indian Grey Partridge (*Francolinus pondicerianus*), introduced about 1750, is holding on precariously. The Helmet Guinea Fowl (*Numida mitrata*), introduced in the eighteenth century, is now very rare in the wild state, though several domesticated races exist. Only two ducks are to be found in Mauritius, the White-faced Tree Duck (*Dendrocygna viduata*), which may have migrated here from Madagascar, and Meller's Duck (*Anas melleri*), also a Malagasy species. Both are extremely rare.

The Red Avadavat (*Amandava amandava*) was an early importation in Mauritius. It was wiped out by the great cyclone of 1892. The same fate overtook the Cape Canary (*Serinus canicollis*) which was last seen in 1913. A different fate overtook the Java Sparrow (*Padda oryzivora*), which was introduced from Malaya about 1750. It became such a pest that an ordinance was passed to encourage its destruction. It was last seen in 1892. The Grey-headed or Madagascar Lovebird (*Agapornis cana*) was once common in Mauritius, but is now only found in the small neighbouring island of Rodrigues. Both the Pied Crow (*Corvus albus*) and the Indian House Crow (*Corvus splendens*) were introduced into Mauritius, the latter on several occasions. Both were indiscriminately shot and are now extinct in the Island. The Madagascar Broad-billed Roller (*Eurystomus glaucurus*), a large, handsome, magenta

bird, occasionally migrates to Mauritius between October and June. It is nearly always slaughtered on arrival.

Yet some immigrants have managed not only to survive but to thrive. The absence of cyclones over the past twelve years has permitted the increase of many of the small finches. Both the Spice Finch and the Waxbill brought to Mauritius in the eighteenth century are becoming more abundant. The Spot-backed Weaver, known in the local French *patois* under the endearing name of "le schlugschlug", is increasing so rapidly as to become a pest. The Zebra Dove which reached Mauritius *circa* 1781, is well established.

The Mynah was imported about 1760 to control locusts and grasshoppers which were devastating crops. It has performed this task well and "le martin", as it is called locally, is the most conspicuous bird in Mauritius. The Ring-necked Parrakeet was brought from India about 1886, and is now considered a destructive pest. The Bulbul is even less popular because of its attacks on ripening fruit. It was introduced as a cage bird and accidentally released in 1892.

Possibly the most beautiful Mauritian immigrant is the Madagascar Fody (*Foudia madagascariensis*) which was introduced some time in the eighteenth century. It is a bird about the size of a canary. The male in the early summer breeding season is a brilliant scarlet, which gives rise to the local name "cardinal". The wings are brownish and there is a small black diamond shaped mask over each eye. The female is yellowish-brown. They are fairly common birds though extremely shy. Much rarer is the Mauritius Fody (*Foudia rubra*), the ninth endemic Mauritius bird. Only the head and breast of the male of this species are scarlet, the rest being greyish-brown. The diamond-shaped eye patches are much larger than those of the Madagascar species. The female is brownish-grey.

In spite of the existence of many easily bred species and a nearly perfect climate, there is little aviculture in Mauritius. In the central market one can purchase Green Singing Finches, Waxbills, Spice Finches, Ring-necked Parrakeets, and Zebra and Necklace Doves; some degenerate Budgerigars are also offered. Most of these birds are kept as cage birds or in decorative aviaries in gardens. Little attempt is made to breed them. It seems a great pity that no efforts are made to breed some of the rarer endemic birds which, I fear, will disappear all too soon from this lovely Island.

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AVICULTURE AND OUR KNOWLEDGE OF THE PARASITIC WEAVER-BIRDS

By HERBERT FRIEDMANN, Curator of Birds, United States National Museum, Smithsonian Institution (Washington, U.S.A.)

Aviculturists frequently have opportunities to add to our knowledge of many kinds of birds, but because their first interest is properly one of keeping and breeding their birds, rather than looking for new data, they sometimes fail to record detailed observations which would be of use to other students of birds. The purpose of this short paper is to call attention to the need for fuller information on the Whydahs of the genera *Vidua* and *Steganura* and the related Combassous or Indigo Finches.

These birds, either known to be parasitic in their breeding or suspected of being so, are frequently kept in aviaries, which gives the aviculturist the opportunity to add important information of a sort that would be extremely difficult to obtain in field studies of wild birds. Parasitic birds have been a special study of mine for many years and at present I am preparing a comprehensive report on these weavers. Bringing together all the available information, both published and unpublished, has revealed the many and serious gaps in our knowledge of them, and I would urge all aviculturists having any of these birds to keep careful records of any observations on the courtship and breeding habits they may display. I shall be glad to correspond with anyone having notes on them, and hope that by combining many individual notes and experiences there may result an account more useful to, and more meaningful for, all parties concerned.

The need for further knowledge may be made clearer by appending here a series of particular questions to which it is hoped that some answers may be forthcoming from observations on these birds in captivity. First of all a list of the species involved may be helpful. They are as follows:—

Pin-tailed Whydah, *Vidua macroura*.

Blue Whydah, *Vidua hypocherina*.

Straw-tailed Whydah, *Vidua fischeri*.

Shaft-tailed Whydah, *Vidua regia*.

Paradise Whydah, *Steganura paradisaea*.

Black-winged Indigo Finch, *Vidua (Hypochera) chalybeata*.

Dusky Indigo Finch, *Vidua (Hypochera) funerea*.

Brown-winged Glossy Indigo Finch, *Vidua (Hypochera) amauropteryx*.

There are many races of the Indigo Finches, some of which figure in the literature as distinct species—*ultramarina*, *nigeriae*, *camerunensis*, *codringtoni*, etc., but it appears that all are referable to the three species listed above. Another parasitic weaver, the so-called Cuckoo-Finch,

Anomalospiza imberbis, is of interest in this connection, but it has not been kept as an aviary bird to any extent.

Specific questions for which answers are needed for each of the above birds are all too numerous. The following are the most obvious and important ones that aviculturists may be able to help solve.

- (1) What is the incubation period (in days) ?
- (2) Are the eggs laid at daily intervals or is there a longer period between them ?
- (3) How many eggs are laid by a single hen in what would correspond to a "clutch" ? Size and colour of the eggs ?
- (4) Which species attempt to make nests themselves and under what conditions do they do so ? (see, in this connection, the note by Karl Nielsen, AVICULTURAL MAGAZINE, 1956, vol. 62, pp. 11-13, where the Black-winged Indigo Finch, *Vidua chalybeata*, is recorded as making its own nest and raising its young in one aviary, and as parasitic on Fire Finches in another).
- (5) When nests are built by the Viduines themselves do both sexes take part in the process ; if only one, which one ? Describe the nest as accurately as possible.
- (6) In such cases is incubation done only by the female, the male, or both ?
- (7) In such cases, is feeding of nestlings done by the female, the male, or by both ?
- (8) How long does the nestling remain in the nest (number of days from hatching to leaving the nest) ?
- (9) In cases where the Viduine species is parasitic on another bird in the aviary, does the parasitic egg hatch before those of the host ?
- (10) In such cases, does the female parasite remove or damage one or more of the eggs of the host when laying its own ?
- (11) In such cases, do the young of the parasite and of the host get along together amicably, or is there aggressive behaviour between them ? If there is, just what takes place ?
- (12) Is there any sign of hostility between the adults of potential hosts and potential parasites, as there is between many small birds and some cuckoos ?
- (13) Does the male indulge in any courtship display in captivity ? If so, how regularly or frequently ? What does the courtship consist of, and how does it differ in different species of Whydahs or Indigo Finches ?
- (14) Describe in detail the coloration and pattern of the mouth markings and gape wattles of the young nestlings. In such cases as may occur where unnatural hosts are used, by virtue of their availability in the cage, note whether there is great dissimilarity between the mouth markings of the young of the host

and of the parasite. If there is, watch to see if the lack of similarity seems to work against the attention the young parasite receives from its foster-parent.

Information on any of these points for any of these species will be greatly appreciated. Needless to say, full credit will be given the donors for any information they may supply. Due allowance will have to be made in interpreting observations for the artificial elements introduced by the fact of captivity, such as the unnatural choice of hosts forced upon a parasite by having to use what other birds the aviary contains, by the absence of "individual distance", etc.

* * *

FIRST BREEDING OF THE GREATER HILL MYNAH (*EULABES RELIGIOSA*) AT THE KESTON FOREIGN BIRD FARM

By EDWARD J. BOOSEY (Keston, Kent, England)

A pair of Greater Hill Mynahs have successfully reared a young one here at the Keston Foreign Bird Farm this (1957) season, and in reply to a letter of mine, Mr. Prestwich wrote saying they have "certainly never been bred before".

The parents are a most amusing and quite celebrated couple as they appeared on television in September, 1956, when an hour's programme was devoted to our Bird Farm.

We imported a number of hand-reared Greater Hill Mynahs from India in 1955 and kept one specially tame cock whom we called Joe. He was given an aviary to himself and the following year was provided with a mate who more or less christened herself Jo-Jo. Incidentally, although they are superficially as alike as two peas, it is possible to sex these Mynahs by the colours of the eyes and legs. As is the case with many of the cockatoos, the cock's eye has an almost black iris, while that of the hen is of a brownish colour, and her legs are of a paler yellow than his, as also are her wattles.

Our pair both emit terrific wolf whistles and this is apt to have a rather disconcerting effect on our female customers, causing them to glance hurriedly round to see which male member of our staff has taken a fancy to them! They also whistle "Pop goes the Weasel", Joe doing the first part, and Jo-Jo finishing it for him with an extra loud "POP . . . goes the Weasel". Joe gives the most accurate and reverberating imitation of the ringing of a bell—a sound which I should have thought was extraordinarily difficult for a bird to reproduce. They also do a rather fruity laugh and a very wheezy asthmatical cough, and are excellent talkers with a very clear enunciation, among their sayings being: "Hullo Joe," "How are you



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JOEY—THE YOUNG MYNAH.

To face p. 160.]



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JOEY WITH ITS MOTHER IO-IO.

[Alec Brooksbank

Jo-Jo?," "Come on Jo-Jo," and a particularly withering "Silly old Crow!" which one of our staff used to say to Joe when he was in an aviary by himself. They are both, particularly Jo-Jo, very devoted to our General Manager, Bill Cummings—as they ought to be, considering the care he bestows upon them.

Being by nature more or less omnivorous they were always given a varied diet, particularly when they were rearing their young one, at which time they were given bread and milk, insectivorous mixture, apples, pears, cherries, grapes, etc.: minced raw meat, chopped dates, and, morning and evening, a rationed allowance of gentles and mealworms. Once—a rather anxious moment—they were given a skinned mouse and I had qualms lest it should be too much, in one go, for the young one. However, my fears proved groundless, for Jo-Jo took it in her beak with its hind legs flapping about outside, and after doing some rather muffled talking owing to this obstruction, disappeared into the nest-box and fed it to the young one, who was none the worse, and, incidentally, was always very noisy when being fed.

Two days before the young one fledged a most extraordinary thing happened. Jo-Jo suddenly decided to murder Joe, and had not my partner Alec Brooksbank happened to pass their aviary at the crucial moment and succeeded in rescuing poor Joe, she would certainly have succeeded. Although the stronger bird of the two, he was in a state of abject terror and she had got him on the ground in the corner of the flight and was starting to hammer away at his head.

Always hitherto a most devoted couple, they had been together in the same aviary for about eighteen months, and I can think of no explanation at all of why she should have so suddenly and viciously attacked him. In any case a very disconsolate Joe was removed from the aviary and the following day the young one perched for some time in the entrance to the nest-box and then went back inside again. The next day it came right out and flew straight down and had a bath! It was very steady and, although a strong flier, never did any of the usual banging about in the aviary, and I only wish all newly-fledged birds were as self-possessed and sensible.

Actually, if there was to be any trouble between the parents, we originally thought it would be that Joe might attack Jo-Jo, because he was extremely possessive about their only child, and in the early stages did practically all the feeding of it. Incidentally, I may add that the young Mynah is now fully independent and has been taken away from its mother. We naturally wondered what sort of reception Joe would get when he returned to the aviary, but apart from Jo-Jo calling him a silly old crow several times and both of them doing a good deal of whistling, there was very little reaction on either side. The following morning, however, Joe was found dashing about in the aviary and panting with exhaustion, so, although she did not appear to be doing

so at the time, we could only conclude that Jo-Jo had been chasing him about. Rather regretfully therefore, we decided that the only thing to do was to clip one of her wings so that Joe could always easily get away from her. The curious thing is that judging by their demeanour whenever one is watching them, one would still imagine that they are at all times the very best of friends.

Last year the parents went to nest twice, on each occasion breaking their very beautiful, faintly speckled bright blue eggs, but this may have been because their nest had no coconut husk fixed in the bottom, as it had this year. It is true that, from the nesting material supplied, they selected numerous twigs and coarse grass stalks which they deposited in the box, but they did not make a proper nest, and this I think was the cause of the broken eggs. When nesting, they have a curious habit of periodically carrying quite large stones into the nest-box, and these had to be removed from time to time.

As will be seen from the accompanying photographs which were taken by my partner Alec Brooksbank the day after the young one left the nest, it was at first smaller than its mother, and, of course, lacked the high gloss on the black plumage of an adult. Its legs were very palish-whitish-yellow, as were the rudimentary wattles which consisted of small, flat patches of bare skin.

As described above Edward J. Boosey has bred the Greater Hill Mynah (*Eulabes religiosa*). It is believed that this may be a first success.

Any member or reader knowing of a previous breeding of this species in Great Britain or Northern Ireland is requested to communicate at once with the Hon. Secretary.

* * *

THE BIRDS AT PAIGNTON ZOO

By Captain H. S. STOKES (Longdon, Rugeley, England)

On a recent visit to this Zoo, which was often referred to in our Magazine in Mr. Whitley's day, it was a great pleasure to see the beautiful garden and lake and the wonderful greenhouses all planted with rare and lovely plants, and to find the bird population being gradually brought up again to its pre-war standard. The Paignton Zoological and Botanical Gardens, Ltd., the proprietors of this Zoo sent an expedition to British Guiana on their own account, and this has resulted in a number of rare and interesting birds and mammals being brought back.

The great tropical house with its nine large compartments and a score or so of small ones has as yet but few birds in it, but includes Sunbirds and a pair of Violaceous Tanagers which were nesting

One compartment with a small pool was being prepared for a Surinam Jacana (*Jacana spinosa*) which the Zoo has had for some time.

The Parrot house, with its cages of unusual and very practical design, still contains some of Mr. Whitley's old inmates, such as a Blue-eyed Cockatoo and a Green-winged King Parrakeet. There is a good series of Amazon Parrots, including the Yellow-headed, Mealy, Red-throated, Salvin's, Sallé's, and Orange-winged. The Conures also are well represented with the Brown-throated, Finsch's, the Greater Patagonian, and Golden-crowned. There are specimens of the Orange-crowned Gold Coast Parrot (*Poicephalus gularis*), and of Maximilian's Parrot. In this house were also a pair of Abyssinian Touracós and a pair of Double-toothed Barbets (*Lybius bidentatus*) brought from Africa by Mr. Michelmores, the head of the Whitley Educational Trust.

Extensive repairs and renovations have been carried out to many of the houses and ranges of aviaries, and these are now populated by a choice selection of birds, which were shown to me by the Curator, Mr. Travers. A great deal of thought is given to the care and comfort and feeding of the birds, and the result is obvious in their beautiful condition.

A range of about eight tropical aviaries has a good selection of parrots, doves, and softbills, and Tinamous of two interesting species. One compartment contains four specimens of the Little Blue Heron (*Florida caerulea*) in its immature white form, another one a pair of Mount Roraima Aracaris (*Pteroglossus roraimae*), brought back by the British Guiana expedition, and thought to be a first importation.

There is a long range of outdoor aviaries, with shelters which can be opened when necessary, containing a series of macaws and cockatoos. Another range with very large flights has Occipital Blue Pies, breeding early, and a small collection of pheasants.

The birds of prey range houses among other Raptores a pair of Condors which must have been there for thirty years, the hen laying early. Owls are also well represented.

Beautiful paddocks on the hillside contain Sarus, Stanley, Demoiselle, and White-necked Cranes; Cereopsis Geese bred last winter, and barnacles were nesting at the time of my visit.

Perhaps the pride of the whole collection are two Wattled Cranes, received separately from Africa, the later arrival a young bird. It is greatly to be hoped that they may prove to be a pair.

A small pond enclosure has Rosy Wood Ibises, Sacred Ibises, and Tree Ducks, and another one Black-necked Storks and Pelicans. Black-footed Penguins had bred in this shelter.

The main lake, with wooded islets and beautifully planted margin, has a rather sparse collection of waterfowl, which it is hoped to increase. Loose in the garden are literally scores of Peafowl, mostly very

tame, and a great attraction to visitors. This is not the place to speak of domestic pigeons, of mammals, of tropical fish and reptiles, all well displayed and in excellent condition.

The Zoo authorities have ambitious schemes in view for the development of a beautiful, wooded valley beyond the lake, with hillside paddocks and rocky quarries for a series of large birds and mammals and of groupings of plants in their natural orders. This would certainly be a unique addition, though even to-day a visit of two or three days is not too much to devote to this Zoo.

* * *

NOTES FROM THE WILDFOWL TRUST

By S. T. JOHNSTONE (Slimbridge, Glos., England)

Among the recent arrivals at New Grounds the most important addition to the collection has been a fine consignment of birds made available by the courtesy of the Department for Internal Affairs of New Zealand. This consignment included three pairs of New Zealand Brown Duck (*Anas aucklandica chlorotis*), three pairs of Blue or Mountain Duck (*Hymenolaimus malacorhynchos*)—a species which we understand has never before been kept in captivity, and two pairs of New Zealand Scaup (*Aythya novæ-seelandiæ*). These birds have now finished their quarantine and are well established in our pens.

The arrival of two male Kelp Geese (*Chloëphaga hybrida hybrida*) from the Falkland Islands means that all species of geese are now represented in the Wildfowl Trust collection. These were accompanied by two pairs of Flightless Steamer Duck (*Tachyeres brachypterus*).

After many years we have at last succeeded in obtaining and establishing a Bufflehead (*Bucephala albeola*) at Slimbridge. A pair was sent to us from North America but unfortunately the male died on arrival. The female was force-fed on small sections of eel for some days and is now out on the main diving pond, in perfect health.

Common Scoter (*Melanitta nigra nigra*) have also been established for the first time, and a further addition has been a fine pair of Hooded Merganser (*Mergus cucullatus*) reared and presented to us by Mr. Pillin of Seattle.

The fine weather of May and June has helped to make 1957 the most successful breeding season yet recorded. So far ninety species have nested, among the more interesting being the Magpie Goose (*Anseran semipalmata*), Bewick's Swan (*Cygnus columbianus bewickii*), Ring-necked Teal (*Anas leucophrys*), New Zealand Scaup (*Aythya novæ-seelandiæ*), Lesser Scaup (*Aythya affinis*), Indian Comb Duck (*Sarkidiornis melanotos melanotos*), Common Golden-eye (*Bucephala clangula clangula*), Barrow's Golden-eye (*Bucephala islandica*), Goosander (*Mergus merganser merganser*) and Sme-

Mergus albellus); a Spurwing Goose (*Plectropterus gambensis gambensis*) laid one infertile egg. At the time of writing there are some 650 young birds, and although it is early yet it seems likely there will be a record number of birds reared.

The Bewick's Swan was unfortunately disturbed from its nest by the visiting public during the early days of incubation and its five eggs were not hatched. I am pleased to say that she has started a second clutch and we hope to arrange for her to have a more peaceful time brooding the second lot of eggs.

* * *

THE RED-BILLED CHOUGH

By S. PORTER (Derby, England)

Though the distribution of this bird covers an enormous area, from the West Coast of Ireland and the Iberian Peninsula, through Southern Europe and North Africa (a colony inhabiting one of the smaller Canary Isles), the mountain ranges of the Mediterranean, Syria, Abyssinia, Arabia, Southern Russia, Afghanistan, Central Asia, through the Himalayas to North-East China, its habitats are more or less remote localities required by the birds' specialized economy.

These are high cliff faces often rising sheer out of the sea or high altitudes on great mountain ranges, usually in the most lonely and desolate places of the world. Mountaineers have said that the Chough is the last avian inhabitant of the great peaks seen before reaching the utterly barren regions of snow and ice which will not support feathered or in fact any other kind of life.

The following is taken from a recent book, *The Sherpa and the Snowman*, by Charles Stonor, page 104 :—

“ Choughs were much in evidence to-day, and the two kinds found in the Himalayas were both the Red-billed (Tchong-moh to the Sherpas) and the Yellow-billed (or Tchong-Dzum) clever, happy birds, very characteristic of the Sherpa countryside, much as are the rooks amongst ourselves. The climbing expeditions meet them right up at 26,000 feet and even higher, though what takes them to altitudes that are totally devoid of life, it is hard to imagine.

I had met them several times already, bustling about in the village fields, prodding in the ground with their long scimitar beaks, and streaming down the valleys in loose flocks on their way to their feeding grounds and back. Both kinds go together in casual association, but their habits are different, the red-billed do not find their way up so high, or in such large flocks, and they have a jackdaw-like call, as compared with the eerie banshee piping of their relative.” And again, from the same source :—

“ My attention was called to a vast flock of yellow-billed choughs

swarming overhead, a thousand or more strong ; they were engaged in some spring courtship flight, spread out when we first saw them in a great dark cloud, like a drifting plume of smoke or a swarm of gigantic bees. Each and every bird of the flock, wing quills spread apart, was dipping and diving, planing and weaving, in and out of the cloud of its fellows, now solitary, now a member of a little group broken away and displaying as a unit. The whole assemblage was sometimes a continuous flock, sometimes splitting up into parties swarming together to reunite as a rounded whole or to straggle out streamer-wise. Surely this must be one of the most wonderful spring flights among birds. Even the hard-bitten Sherpas were impressed and stopped to watch as the choughs began to spiral in wide circles, until they soared away in silence, out of sight of the naked eye, at a height of anything between twenty-five and thirty thousand feet.

It has become a common experience of mountaineering expeditions in the Himalayas to meet choughs and other birds at immense altitudes. Apparently the lack of oxygen and the conditions of the atmosphere has no effect on them at all ; an extraordinary condition of affairs for which the science of physiology does not so far give an explanation.

To the ordinary outsider it suggests a remarkable body mechanism, whereby a quick-moving creature such as a bird, all of whose vital processes must act with such infinitely greater speed than our own, can climb to the thinnest atmosphere, where we can hardly scrape along with artificial helps, and in a matter of seconds adjust its every movement to a totally different set of outside stresses and strains."

Yet strange to say the Chough is equally at home down at sea-level on the stony beaches at the base of the cliffs in the few places where it survives in the British Isles.

It is in the mountainous regions and on the cliff faces that one sees how useful is the long, slender down-curving bill which, with the legs and feet, look as if they had been cut out of coral, for not only do they look like red coral, but they have the feel and texture of that substance. The bill is quite different from that of any other member of the Crow family, except that of its near relative the Yellow-billed Chough, though with this bird it is shorter and less curved. Neither does any member of the Crow tribe use his beak with such facility. The Chough can use it to work round corners or under rocky ledges, for prying under flat stones, exploring fissures and crevices, seeking out insects which are forced to hide away from the bitter winds which so often blow at hurricane force in those high regions.

In those lofty realms where our bird makes his home there is great competition in the plant world for an adequate anchorage, so there is little loose or free soil. It is matted and turfy and held together by the roots of rock plants. It is here that the Chough uses his beak as a

pickaxe to hack into these masses for insects or their pupae, which in the cold altitudes, lie torpid for long periods.

I have watched the birds digging out tiny pockets of earth on cliff faces which contained the nests of minute ants and unearthing ground spiders which seem common in high places, it's then that the beak is used as forceps or tweezers to pick out the edible bits in the debris. In fact the Chough seems to spend his time either probing, exploring, and excavating the stony world in which he lives in his never-ending search for food—or in aerial acrobatics. Though there may be swifter fliers, such as the dashing and meteor-like Peregrine or the speeding Alpine Swift, scything its way with incredible speed through the high atmosphere, and which must be the fastest flyer of all birds, few, if any, have the effortless and graceful flight of the Chough.

It seems not so much to use its power of flight to get from one place to another, as for the sheer joy of flight alone, and incongruous as it may sound when speaking of a crow, its flight has the lightness of thistledown borne on the wind. Its displays of aerial prowess are enhanced by the settings in which they are given, which are in the most spectacular, majestic, awe-inspiring, and least frequented by man, of all the world's most solitary and lonely places.

Once common around the high cliff faces of our Southern and Western shores, the Chough has now, alas, been reduced to the status of one of our rarest breeding birds, colony after colony vanishing during the last 150 years. Its near extermination has been brought about by two main agencies, by the egg collectors who have almost every accessible nest marked down and who receive word from the local inhabitants when the eggs are ready for taking. The second reason for its rapid decline is shooting, firstly by scientific skin collectors in the nineteenth century and by that fraternity who found pleasure, and still do, in massacring our wild birds. In the last century sea-bird shooting was one of the favourite recognized "sports" for holiday makers, and guns and boats could be hired on the spot.

In Cornwall and Wales the birds' habit of digging has been its undoing. Farmers with cliff-land farms have seen the birds probing about in the newly-sown wheat or oat patches on the top of the cliffs and refusing to believe that the birds were not after the freshly planted seed were glad of an excuse to slaughter them. The belief that the birds eat grain is very prevalent in Cornwall, where a few pairs of Choughs still linger.

Considering that the Red-billed, or Cornish Chough, as it used to be called in these Islands, is such an outstanding member of the Crow tribe and that it is so well known in folklore and tradition—Shakespeare speaks of "the russet-pated Chough"—it is very surprising how very little has been written about it in avicultural literature.

In all the years of keeping birds I have never seen or heard of but one offered for sale and that was at a fantastic price. Yet they are sure to be seen at any of the larger bird shows in this country where the owner can be certain of getting a "First" in the "Large British Softbill" class. In fact at a leading show in recent years I heard that nine had been entered for competition!

I had kept the other species, the Alpine or Yellow-billed, but gave them away to a local public aviary before embarking on a long voyage abroad. I was rather sorry about this afterwards, for the birds turned out to be a true pair and nested every year and hatched young, but failed to rear them as they were not supplied with suitable food.

However, within recent years a pair were known to be on sale, and it was more or less to save their lives that I bought them. When I got them home they certainly looked a "poor buy". Owing to unsuitable food which lacked the necessary vitamins, there were large areas of the plumage which lacked pigment, being a dirty putty colour instead of the normal glossy purple-black. The naturally brilliant coral-coloured beaks and legs were pale and dull, especially in the male bird, whose bill was overgrown and who had a nasty chesty cough. The hen's beak was badly crossed which made it difficult for her to feed.

On being put into a large aviary with rocks and gravel, a large bath, plenty of room to fly about and a shed (which they loved), their joy knew no bounds. For the first few weeks they spent their time alternately bathing and whetting their beaks on the flat stones in order to get them into the proper shape again.

The discovery of the opening which leads into the shed was the source of great interest to the birds. At first they discussed the matter on the ground, then flew on to the bottom ledge of the opening, craning their necks inside so far that they nearly fell over, all the while conversing with each other. Sometimes the cock would push the hen in and she seemingly terrified would rush out and then try to push the cock in. This went on for a day or more and when at last they decided it held no terrors for them, they simply loved it, mainly I think because out of a window they could see if any one approached from the house. Tamer or more charming birds I never had. They are quite without fear.

The Chough from all accounts is a bird with a happy disposition; though most birds of the Crow family are quick-witted (they have to be to survive), intelligent and cunning, some have a sense of humour—but this bird is quite different, it seems to dance its way through life, always happy, light and airy, full of grace and gaiety. It is interested in what one does, but the interest shown does not give the impression of noisiness. There is always a joyous welcome when

one comes in sight, though they often remain silent when a stranger appears.

In the spring of 1956 the birds went to nest in half of a large barrel which had been cut in two and placed end up on a platform near the top of the aviary. A large hole had been cut in the side of the barrel and the whole simulated a small cave. This was taken to with alacrity. Soon the birds had a large structure built in the centre of which was a small depression about the size of an ordinary Blackbird's nest, and in time five eggs were laid. These were duly incubated but, alas, failed to hatch, as they proved to be infertile. This was no doubt owing to the low condition of the birds which had been looked after during my prolonged illness by someone who, though professing to be an ardent aviculturist, had neglected the birds, and finally let me down altogether, until my kind friend Fred Logan stepped into the breach.

During this nesting period the cock became extremely aggressive, in fact he has never lost his pugnacity. He had a specialized and cunning method of attack. As soon as he felt one's eyes were not on him, he made lightning dashes for one's head, which he attacked with his feet, inflicting quite nasty abrasions.

The attempt at reproduction seemed to give him added confidence and he became very aggressive towards humans he knew, though I could never decide if this was really pure bad temper or just very aggressive and boisterous play. When he got himself worked up he would crouch on the ground, feet well apart, feathers standing on end, head between his legs and wings alternately waving in a kind of rowing motion. His attacks on humans greatly annoyed the hen, who would take a flying shot at him and knock him on to the ground, where the pair, a tangled ball of feathered fury, would fight it out. In a few minutes after this was over they would be their own friendly selves towards each other.

Bathing they love, and if by accident they have been closed in their shed for a period of several hours, they both indulge in repeated bathing which lasts for an hour or so.

They live mainly on a good insectivorous mixture with as much live food as possible. Unlike other members of the Crow family they refuse any type of vegetable food, even cheese in bulk they disdain, though I use it, finely grated, in their food. Nearly all insectivorous birds like cheese, especially Jays and their kindred. As mentioned before, in a wild state Choughs feed to a great extent on the contents of the nests of small species of ants, but my birds when given "uncleaned" ant eggs in bulk with nest debris and living ants, were simply terrified and have always remained so, keeping as far as possible from the container. They are very fond of mealworms and woodlice.

The Choughs live amicably with a pair of Blue Crossoptilons, though perhaps "amicably" is hardly the right word . . . "armed truce" would perhaps be better. I am sure they would be unsafe with any other birds, either their own size or smaller. The Crossoptilons live in a state of haughty disdain, ignoring the Choughs, as far as possible until the latter tweak their long flowing tails. However, with young Crossoptilons it's quite a different matter. These are chased and chivvied and generally tormented until they hide away and would rather starve than come out of their hiding place.

Many so-called sub-species of the Red-billed Chough exist in the imagination of scientific ornithologists, five being recognized in the U.S.S.R. alone, the differences being usually in the length of the third primaries, the central tail-feathers, or the legs; these being only a question of millimetres. But to casual observers the whole genus appears to be more or less uniform.

* * *

LONDON ZOO NOTES

By J. J. YEALLAND.

The Cambridge French West Africa Expedition, working in the Gabon, has sent two Cameroon Spotted Honey-Guides (*Indicator maculatus stictithorax*), the first of the Indicatoridae to be received here. This race, like most of the Honey-Guides, is not brightly coloured, rather resembling a very small and dull coloured hen Satin Bower Bird in general pattern, but for a variety of reasons the family is of great interest.

The Honey-Guides are a small family (eleven species according to Friedmann; thirteen according to Peters) of four genera and all inhabit Africa with the exception of the Orange-rumped of the Himalayas and a race of it ranging from northern Assam to northern Burma, and the Malayan Honey-Guide of Siam, the Malay peninsula, Sumatra and some adjacent islands.

The habit of guiding ratels (honey badgers) and human beings to bees' nests is known to occur in the Greater Honey-Guide and the Variegated or Scaly-throated. The guiding call of the former is a chattering noise. This appears to be the best known of the family and has a wide range over Africa southward of the Sahara wherever the habitat is suitable.

The birds appear not so much interested in honey as in the comb and larvae of bees which, of course, they could not obtain unaided, and it is only after the ratel or man has taken the bees' nest that the bird (almost always alone, but occasionally there are two) comes to feed on the remaining fragments. Bees and other insect life are also eaten.

The Greater Honey-Guide is, according to Friedmann, known to be

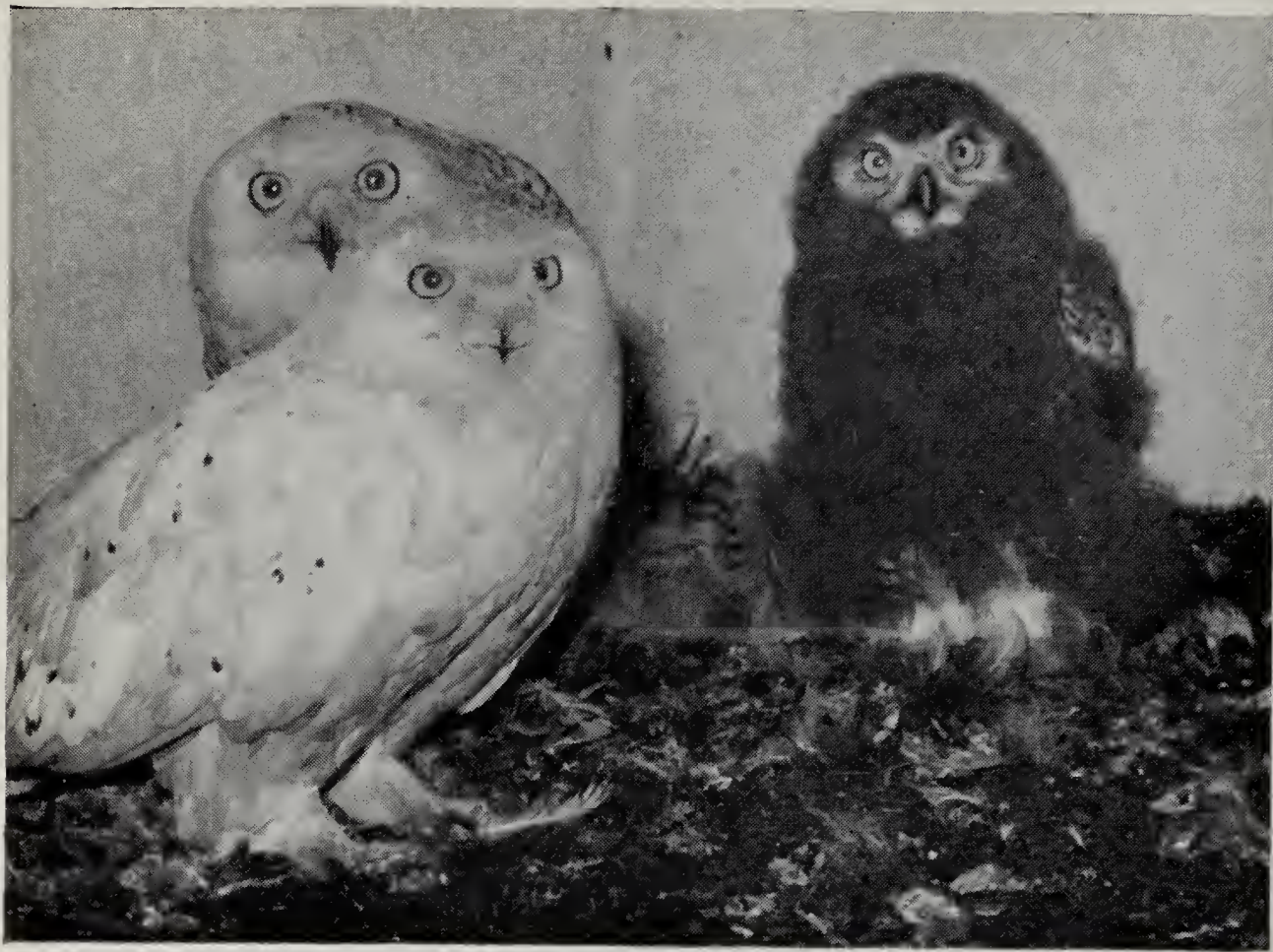


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[Zoological Society of London

THE WHITE-NECKED PICATHARTES (*Picathartes gymnocephalus*).

[To face p. 170.



A PAIR OF SNOWY OWLS AT THE LONDON ZOO AND THEIR YOUNG ONE
HATCHED DURING JUNE.



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[Zoological Society of London

YOUNG SNOWY OWLS HATCHED AND REARED BY A PAIR OF SPOTTED
EAGLE-OWLS.

To face p. 171.]

brood-parasitic on thirty-five different bird species including Barbets, Woodpeckers, Kingfishers, Bee-eaters, Wood Hoopoes, Hoopoes, Thrushes, Starlings, Weavers, Swallows, Ant-eater Chats and Sparrows. All known eggs are white.

The young of at least some Honey-Guides are furnished with a sharp hook on both upper and lower mandibles, these hooks dropping off after some days. Whether the hooks are employed in the killing or ejection of the foster parents' young is not known. It would surely be very difficult in the case of some hole-nesting foster parents for the Honey-Guide chick to evict the others, but whatever the method, and there is evidence of both, the Honey-Guide is eventually the sole survivor of the brood.

The Greater, Lesser, and Lyre-tailed perform flights in which a noise is made, presumably by the outer tail-feathers, when the bird dives. The skin of these birds is said to be very tough—evidently a protection against the stings of bees.

Since the foster parents never eat honeycomb, the young Honey-Guide cannot feed on it until it is able to fend for itself, when, presumably, it learns by watching the adults. Why there should be this desire for bees' wax and how it is digested; how the guiding process was evolved and how rats and native people could originally have learned that it was advantageous to follow a chattering bird are among the many problems concerning these strange birds investigated by Dr. Herbert Friedmann, but although a great deal of information about them is set forth in his work, "The Honey-Guides" (*United States National Museum Bulletin* 208), much remains to be discovered.

Honey-Guides have been kept in captivity. Mr. Sydney Porter wrote of an immature Greater Honey-Guide that he rescued and kept in Southern Rhodesia (*A.M.* 1927, p. 152) which he referred to as the Yellow-throated, but he was not alone in making this mistake, for the young of this species is so different in plumage from either parent that for a long time it was considered another species. Friedmann says, "A South African aviculturist, W. R. Carthew, informs me that he has kept both greater and lesser honey-guides for over a year. . .".

Other birds new to the Collection are a pair of the Malayan Bustard-Quail (*Turnix suscitator atrogularis*) presented by Mr. G. H. Newmark, who also sent an Orange-headed Ground Thrush and a Black Racquet-tailed Magpie; and an Eastern Waxwing (*Bombycilla garrulus central-asiae*) presented, together with a pair of Crested Black Buntings, a Fohkien Grey-headed Crow-Tit and a Grey Starling, by Dr. K. C. Searle. Messrs. Brooke Bond have given two Baillon's Aracaris and two Purple-crested Touracos; three Common, three Ring-necked, and two Mongolian Pheasants have been received in exchange.

The Bustard-Quail are not, of course, Quail, but are of the same Order as the Bustards, Cranes, Rails, Kagu, etc. The females are

larger and more boldly coloured than the males and are said to be very pugnacious during the breeding season. The males incubate the eggs and care for the young. Members of this family are also known as Button Quail or Hemipodes, and the Andalusian (*T. sylvatica*) of north-western Africa and the southern parts of Spain and Portugal has on three occasions been found in England, but these were generally regarded as escaped birds, though, as Newton says, "easily satisfied persons have admitted the species as a 'British Bird'."

The Eastern Waxwing is much like the more westerly bird, but a little paler and greyer.

Three Snowy Owls, the first to be bred in the Gardens, have been reared, two by a pair of Spotted Eagle-Owls and one by the parents which have nested each year for several years, but have not previously kept the chicks alive for more than a day or two. The Malayan Glossy Starlings sent by Dr. Searle several years ago have reared two young, one in each nest. This starling was bred in 1931 by Mr. A. H. Isenberg in California (*A.M.* 1931, p. 23), but has not, so far as I know, ever before been bred in this country. The young are quite unlike either parent, being grey on the upper parts and whitish streaked with dark grey underneath—rather like a female Amethyst Starling. The nests were built in a crevice of the rockwork.

The Black-throated Cardinals have built five nests and hatched a few young ones, but have not yet succeeded in rearing any. The old breeding pair of Green-winged King Parrakeets have bred only one this year; four Quaker Parrakeets, yet another Swainson's \times Red-collared Lorikeet, Cockatiels, Masked Lovebirds, another Green-backed \times Grey-headed Gallinule and some Pheasants have also been bred. A pair of Sarus Cranes nested but did not hatch their two eggs.

One King Penguin chick has been hatched and a second pair are still incubating an egg.

A North American White-headed (or Bald) Eagle has died after nineteen years in the Gardens. The oldest inhabitant among the birds of prey is a Bateleur Eagle that came in 1919.

The White-necked Picathartes sent from Sierra Leone four months ago has died from tuberculosis, a disease which it may have contracted in Africa, for Blount states that, in domestic fowls, "Except in those rare instances where the infection is passed via the egg to the chick, the natural incubation period is long, never less than five months." Whether the incubation period is the same in smaller birds is not known, but the disease is generally associated with aged birds.

Looking through the 1927 volume of the Magazine I noticed an article by Miss Knobel describing a visit to Mr. Spedan Lewis' collection of owls at Wargrave. Mention was made of a tame Turkestan Eagle-Owl, a bird which came here in 1950 and which until this year has laid and incubated a single egg each summer.

BRITISH AVICULTURISTS' CLUB

The fifty-eighth meeting of the Club was held at the Rembrandt Hotel, Thurloe Place, South Kensington, S.W. 7, on Monday, 9th September, 1957, following a dinner at 7 p.m.

Chairman : Mr. G. T. Iles.

Members of the Club : Mrs. J. R. Alderson, Miss J. Barnes, P. C. Bath, A. W. Bolton, Miss K. Bonner, W. Brain, Captain A. A. Clarence, C. W. G. Creed, Sqd.-Leader C. Everitt, Mrs. C. Everitt, Miss R. M. Ezra, A. W. E. Fletcher, Miss S. A. Fothergill, Miss E. G. Ganner, J. C. Garratt, Mrs. O. S. Gent, Dr. E. F. Gleadow, F. Grant, A. V. Griffiths, H. J. Harman, M. Scott Henderson, M. Hessey, Miss S. I. Hobday, H. J. Indge, Mrs. P. Ingram, F. E. B. Johnson, F. T. Jones, Miss S. R. Joseph, Miss E. M. Knobel, Miss M. H. Knobel-Harman, Dr. F. B. Lake, E. C. Lewis, Mrs. E. M. Lonsdale, P. H. Maxwell, A. F. Moody, F. Mosford, G. S. Mottershead, K. A. Norris, A. A. Prestwich, S. Sanderson, R. C. J. Sawyer, A. C. Soanes, E. O. Squire, E. N. T. Vane, C. H. Wastell, Mrs. C. H. Wastell, Mrs. G. Wheatley.

Guest of the Club : Field-Marshal the Rt. Hon. Viscount Alanbrooke, K.G., G.C.B., O.M., D.S.O.

Guests : B. T. Askew, A. Bangay, Mrs. A. Bangay, Mrs. M. E. Blundell, A. R. Bull, A. Cameron (Wellington, N.Z.), Mrs. D. Carson-Roberts, R. H. A. Caunt, B. Chadwick, Mrs. M. Davies, Mrs. S. Demel, L. G. Ellis, Mrs. L. G. Ellis, Miss H. Frampton, Major J. Fletcher, Mrs. J. C. Garratt, Mrs. E. F. Gleadow, G. Gould, Mrs. H. Gould, L. W. Hill, Mrs. L. W. Hill, Miss R. Hill, Mrs. F. E. B. Johnson, Mrs. F. B. Lake, M. H. Letts (Auckland, N.Z.), Mrs. E. C. Lewis, Miss D. G. Lonsdale, Mrs. A. F. Moody, E. E. Morrell, Mrs. J. F. Rodgers, F. H. Rudkin (California), Mrs. F. H. Rudkin, P. W. Seligman, Mrs. P. W. Seligman, R. Stone, Mrs. E. N. T. Vane.

Members of the Club, 48 ; guests, 37 ; total, 85.

After the Loyal Toast, the Hon. Secretary proposed the health of Gerald Iles, a founder member of the Club, who is due to sail for Montreal on 9th October.

The Chairman welcomed Mr. and Mrs. F. H. Rudkin, just arrived from California, and expressed the pleasure of all in the attendance of Miss Knobel and E. N. T. Vane, both of whom were in process of recovering from serious illnesses.

Introducing the speaker for the evening the Chairman recalled that it was the third occasion on which Lord Alanbrooke had visited the Club for the purpose of showing films.

Lord Alanbrooke then showed two of his coloured films taken in Spain and Holland, in May, 1956. The first was devoted to the Bee-eater, Black-winged Stilt, Pratincole, and Purple Heron ; and the second dealt with the Long-eared Owl, Great Crested Grebe,

Black-tailed Godwit, Spoonbill, Black Tern, and Ruffs at a display-ground.

Needless to say both films were of the very high standard we associate with Lord Alanbrooke. The large audience showed by its prolonged applause that it fully appreciated the patience and skill of the photographer in securing so many remarkable pictures.

The next meeting of the Club is on **Monday, 11th November.**

ARTHUR A. PRESTWICH,
Hon. Secretary.

* * *

NEWS AND VIEWS

Dr. W. C. Osman Hill, Prosector, Zoological Society of London, has been seconded to Emory University, Georgia, U.S.A.

* * *

Karl Plath, Curator of Birds, Brookfield Zoo, Chicago, has been made an Honorary Curator, Chicago Natural History Museum.

* * *

There are now 26 Emus in the Chester Zoo. Last year's successful experiment with an incubator was repeated and fifteen young have been reared this year.

* * *

Ronald J. E. Horsham has been mainly responsible for the formation of the Zoological Society of South Africa. It is intended that the new Zoo in Cape Town shall rank with the best in the world.

* * *

G. A. Gjessing, Drammen, Norway, reports the following reared : 6 Stanleys, 3 Rock Pebblers, 6 Black-cheeked, and 2 Peach-faced Lovebirds ; two hen Chinese Painted Quail on eggs, and one with three chicks ten days old.

* * *

Gerald T. Iles, Superintendent of the Belle Vue Zoological Gardens, Manchester, since 1933, has been appointed first Director of the new City of Montreal Zoological Park. The Park will cover an area of 400 acres and \$9,000,000 have been allotted for its development.

* * *

L. J. Praill, Hereford, has bred four All-green Parrakeets (*Brotogeris tirica*). The first breeder in Great Britain was Dr. L. Lovell-Keays who had a nest of four reared in 1914 : and Wesley T. Page bred three in 1918, after several broods were hatched but not reared.

David Reid-Henry held a very successful show of bird paintings at the City of Leicester Museum and Art Gallery, 28th August–29th September, 1957. Amongst the paintings exhibited were the originals of a dozen coloured plates that have been published in the Magazine.

* * *

G. Anderdon, Taunton, has bred a hitherto unrecorded hybrid, Grey Singing Finch \times Zebra Finch (white) : also an uncommon cross, Bicheno's Finch \times Zebra Finch (fawn). The latter hybrid was bred by R. Ellis, of London, 1888 : and by L. W. Hawkins, West Dulwich, in 1903, one reared, and in 1904, two.

* * *

In 1936 the Edinburgh Zoo received six Night Herons from Canada. They reared several broods in an aviary and in 1950 some of the young birds were released. They did not leave the Park and built nests in the trees surrounding the Sea Lions' Pool. Now about thirty of these birds form a free colony, nesting regularly.

* * *

Allen Silver continues to breed Golden-mantled Rosellas and Stanleys with considerable success—please note, none for sale ! The Rosellas, now somewhat aged, have reared a brood of three (the smallest number any of the three hens used over the years has reared). This now makes 72 young reared in the same aviary and box, since the first pair was obtained from Tom Goodwin many years ago. The Stanleys reared four in 1955, six in 1956, and five this year ; and a 1955 female paired to an adult Australian male has at first attempt reared six.

* * *

Breeding reports.—Sqd.-Ldr. C. Everitt, Green Cardinal, three four-day-old chicks washed out of the nest in a rainstorm : Black-crested Finch, one of the two flying young was lost as the result of the storm, three more in the nest now ; Pretty Warbling Finch, two hatched and thriving. Lord Gerard, Black-breasted or Banded Plover (*Zonifer tricolor*), two reared of three hatched. R. C. J. Sawyer, the young Roulroul was fully reared. B. C. Turner, Virginian Cardinal, three eggs, one hatched by a canary died within twenty-four hours ; the other two hatched by parents died after two and four days.

* * *

Erratum.—The young Plover reported as hatched at the Wassenaar Zoo (page 141) were not Spur-winged but Black-breasted.

A. A. P.

REVIEWS

AUDUBON WESTERN BIRD GUIDE. By RICHARD H. POUGH.
Published by Doubleday and Company, New York, 1957. Price
4 dollars 95 cents.

This is a companion to Mr. Pough's two previous books—*Audubon Bird Guide* which covers small land birds of Eastern and Central North America from Southern Texas to Central Greenland, and *Audubon Water Bird Guide* which comprises water, game, and large land birds of the same areas. The present volume comprises land, water, and game birds of Western North America, including Alaska, from Mexico to Bering Strait and the Arctic Ocean. Of the 614 species included in the book, 203 are exclusively western, and these are described fully with information concerning nests, habits, and range. For the other 411 the range only is given as they have already been described by the author in his books on eastern birds, and the page references of these are given. There are 340 drawings in colour by Don Eckelberry, some species are shown in flight, for others the comparison of mature and immature birds, plumage at different seasons, or male and female are given. There are also a large number of line drawings by Terry M. Shortt, mostly of birds in flight. The information is clearly and concisely given and the book is a worthy addition to the author's previous bird guides.

P. B-S.

AN INTRODUCTION TO BIRDKEEPING. By D. H. S. RISDON.
Published by *Cage Birds*, London, 1957. Price 15s. net.

Mr. Risdon's first words in his general introduction are : " This book is for the beginner in birdkeeping. It is not for the more experienced aviculturist." A very good book indeed it is for those who are starting to keep birds, but it also contains much of interest and use to those who are more experienced. For one thing, the author explains clearly the difference between " species " and " variety "—a confusion between the two terms is surprisingly frequently made. The birds which are possessed by those who read Mr. Risdon's book should be happier birds, for all through he stresses the importance of watching them closely and so ensuring their health and well-being. He points out what to look out for and what to do about it, and his book contains many details not to be found in other publications on the subject.

P. B-S.

* * *

NOTES

A POSSIBLE EXPLANATION OF FAILURES IN REARING SUPERB SPREOS

I am having trouble with my brood of Superb Spreos and looking through the past records it seems that very often the birds give up feeding the young just before they fledge. This is just what has happened with mine and I am wondering if my findings might be an explanation of the cause of other peoples' trouble.

The females laid in the one nest a total of seven eggs, six of which hatched. All four birds in the aviary fed the young devotedly and paid no attention to my man, even taking mealworms from his fingers and flying directly with them into the nest. They did not seem to resent my examining the nest daily and this daily examination revealed a dead young one when they were about fifteen days old. It was plump and well-fed looking and had I not been post-mortem minded I might have just thought that it had died of chilling, or something, for the old birds had already cut down on the feeding. I opened it and found that its trachea was just about full of gapeworms; I counted over thirty couples. The old birds had now given up feeding altogether and next day I brought the remaining four into the house (one had disappeared). To my mind the parents had given up feeding because the young were too sick to gape for food and not because of any interference on my part, for this had been going on all the time.

Two of the young ones were very sick and gasped continuously. None gaped for food and it was a matter of prizing open the bill and force-feeding all the time. In any case they were too old to gape for a human foster-parent. By the second day one young one refused to swallow the food put into its pharynx and died the next day. One of the others has a broken femur and unfortunately this one seems to be the most likely to survive. One of the others has wilted a bit, but I do hope I can save at least some.

They share a big planted aviary, 80 feet by 30 feet, with a pair of Green Peafowl, and although it has only been in use for one year, it must be pretty well infected. I intend to disinfect it by killing off the earthworms with Mowrah meal and reduce the risk of gapes and of blackhead in the peafowl.

TOM SPENCE.

* * *

CORRESPONDENCE

BREEDING BLUE ROBINS—A PLAGUE OF FOXES

The hen of a pair of Blue Robins kept in a cage which had made a nest and laid eggs, refused to tolerate the cock after four days, so I removed him to save his life. The hen then incubated and reared four excellent young, two cocks and two hens, which are now independent; she is rebuilding the nest. In the meantime the cock has been paired to another hen in an aviary and has five more youngsters by her. Unfortunately this second hen still seems to want him to help with the domestic duties and I hesitate to borrow him either to return to hen No. 1 or to a third hen which has also built in a cage and is calling for a cock all day. A fourth hen, also in a cage, and paired to her brother, has eggs, but does not appear to be sitting; maybe she is shy and comes off the nest when I am about.

We have a plague of foxes here this year which have pretty well wiped out domestic poultry in the neighbourhood and are also destroying cats—bless them! Unfortunately they are causing me some anxiety by digging at the foundations of my pigeon lofts and aviaries and must go the way of all flesh. One got itself shut up in the garage, where at the risk of blowing the tyres off the cars, I shot it. One morning when I went out to supply breakfast to the baby Robins (5 a.m.) I met a young dog fox ambling down the front path. When he saw me, he merely turned aside and strolled down another path, which has taught me never to go out in the morning without a gun. As we are in a very much "built-up" area, I suppose the lack of rabbits is driving the foxes into the vicinity of human habitation, in search of other forms of food.

K. A. NORRIS.

ELMSTONE,
HIGHFIELD ROAD,
PURLEY, SURREY.

THE AVICULTURAL SOCIETY'S WATERFOWL RINGS

Members sometimes ask to be told the size of the Society's rings required for "the various" ducks and geese, and while the table published from time to time in the Magazine is a good general guide, it is clearly impracticable to include all the species in it—even if anyone is able and willing to measure a number of tarsi of each of "the various" waterfowl.

Keepers of waterfowl should judge for themselves the requisite sizes, and a simple rule is that the ring must move freely up and down the tarsus, but must not be so large as to slip easily off the foot. It should not, of course, fit tightly.

A number of Mallard rings are received from time to time, but I cannot understand why anyone should want to put the Avicultural Society's rings on these or on any other common native species. The scheme is surely intended for members and others wishing to keep foreign or the rarer native waterfowl full-winged so that if, for an unlikely instance, a stray Barrow's Golden-eye is found and it is wearing one of the Society's rings, it will be proved not to be a new bird for the British List, and ornithologists will be spared a certain amount of doubt, not to say grief.

J. J. YEALLAND.

ZOOLOGICAL SOCIETY OF LONDON,
REGENT'S PARK,
LONDON, N.W. 1.

ESCAPED BIRDS

I am writing a book on introduced animals and birds in the British Isles, and should be very grateful for any information about full-winged waterfowl allowed their freedom at present. I am particularly interested in birds that have started to breed away from their home estates, but information about any well established free-living waterfowl, except for Canada Geese, Egyptian Geese at Holkham, and Mandarin Ducks at Virginia Water, would be welcome.

I should also be grateful for information about free-living birds other than waterfowl which have started to nest away from their home estates.

R. S. R. FITTER.

DRIFTS,
CHINNOR HILL,
OXFORD.

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- Mrs. A. C. BIR DE SOUZA, Kilindini Road, P.O. Box 1264, Mombasa, Kenya. Proposed by J. V. Rouillard.
- ELWYN E. BROOKS, 3455 South Hoover Street, Los Angeles 7, Calif., U.S.A. Proposed by W. B. Frostick.
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- Major J. A. R. WISE, Tregye Farm House, Carnon Downs, Truro, Cornwall. Proposed by A. A. Prestwich.
- S. H. WOODS, 37 Tytherton Road, Tufnell Park, London, N. 19. Proposed by A. A. Prestwich.

NEW MEMBERS

The twelve Candidates for Election in the July-August, 1957, number of the AVICULTURAL MAGAZINE were duly elected members of the Society.

CHANGES OF ADDRESS

P. C. BATH, to Park Farm, Roxton, Beds.
WILLIAM G. CONWAY, to New York Zoological Society, Bronx Park, New York 60, N.Y., U.S.A.
A. V. GRIFFITHS, to Dol-llan, Llandyssul, Cards.
G. H. NEWMARK, F.Z.S., to 20 Chalfont Court, Baker Street, London, N.W. 1.
J. J. STROLLO, to Box 6344, Honolulu 18, Hawaii.
J. W. TWELL, to 82 Berkeley Avenue, Chesham, Bucks.
Mrs. GRACE WHEATLEY, to 57 Cadogan Place, London, S.W. 1.
D. P. WYATT, to 168 Parkway, Welwyn Garden City, Herts.

MEMBERS' ADVERTISEMENTS

The charge for Members' advertisements is ONE PENNY PER WORD. Payment must accompany the advertisement, which must be sent on or before the 15th of the month to A. A. PRESTWICH, 61 CHASE ROAD, OAKWOOD, N. 14. All members of the Society are entitled to use this column, but the Council reserves the right to refuse any advertisements they consider unsuitable.

WANTED

(1) Pair Wood Duck (*Aix sponsa*), (2) various small varieties of Quail, other than Chinese Painted.—Major J. M. SERJEANTSON, Yed Hill, Ringwood, Hants.

FOR SALE

Handbook of British Birds, Witherby, 5 vols. (as new) ; *Amateur's Aviary of Foreign Birds*, W. T. Greene, 1883 ; *Rose Annual* (1950-1957), 8 vols. ; AVICULTURAL MAGAZINE, vols. 54-62.—Offers to H. J. RABBIN, 33 Kingsway, Wembley.

1957 hand-reared waterfowl : Carolina, Tufted, Red-crested Pochard, Wigeon, Chiloe Wigeon.—C. D. WESTON, Bradgate House, Grosby, Leicestershire.

WATERFOWL RINGS

Members are reminded that the Society's special blue rings are always available. All Waterfowl in collections, both public and private, should carry them.

Revised prices

Size.		Price per dozen, post free.	
		s.	d.
2-3	Teal	4	0
3	Wigeon	4	9
4	Mallard, Pintail, etc.	5	6
4-5	Smaller geese	6	3
5	Greylag	7	0

Requests for rings should be addressed to the Hon. Secretary, Avicultural Society, c/o Zoological Society of London, Regent's Park, London, N.W. 1, from whom all particulars can be obtained.

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THE AVICULTURAL SOCIETY

Founded 1894

President : D. Seth-Smith, Esq.

**Hon. Secretary and Treasurer : A. A. Prestwich, 61 Chase Road,
Oakwood, London, N. 14.**

Assistant Secretary : Miss Kay Bonner.

Membership Subscription is £1 per annum, due on 1st January each year, and payable in advance. Life Membership £15. Subscriptions, Changes of Address, Names of Candidates for Membership, etc., should be sent to the Hon. Secretary.

THE AVICULTURAL SOCIETY OF AMERICA

Hon. President : Mr. Jean Delacour.

President : Mr. Don Rowland.

**Secretary : Mr. Otis Wade, 1806 Redesdale Avenue, Los Angeles 26, Calif.,
U.S.A.**

The annual dues of the Society are \$2.50 per year, payable in advance. The Society year begins 1st January, but new members may be admitted at any time. Members receive a monthly bulletin. Correspondence regarding membership, etc., should be directed to the Secretary.

THE AVICULTURAL MAGAZINE

The Magazine is published bi-monthly, and sent free to all members of the Avicultural Society. Members joining at any time during the year are entitled to the back numbers for the current year on the payment of subscription. All matter for publication in the Magazine should be addressed to :—

**The Editor : Miss Phyllis Barclay-Smith, 51 Warwick Avenue, London,
W. 9. Telephone : Cunningham 3006.**

The price of the Magazine to non-members is 5s., post free, per copy, or £1 10s. for the year. Orders for the Magazine, extra copies and back numbers (from 1917) should be sent to the publishers, Stephen Austin & Sons, Ltd., Caxton Hill, Ware Road, Hertford, England. Telephone : Hertford 2352/3/4.



DUFRESNE'S WAXBILLS.

AVICULTURAL MAGAZINE

THE JOURNAL OF THE AVICULTURAL SOCIETY
AND THE AVICULTURAL SOCIETY OF AMERICA

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NOVEMBER-DECEMBER, 1957

DUFRESNE'S WAXBILL

(*Coccygia melanotis melanotis*)

By J. J. YEALLAND (London, England)

Dufresne's Waxbill, also known as the Yellow-bellied Waxbill and, in South Africa, as the Sweet Waxbill was first described in 1817 by Vieillot who named it *Fringilla dufresni*, but the description was considered by Sclater to be inapplicable because of being so faulty, and Temminck (*Pl. Col.*, livr. xxxvi, 1833, pl. 221, fig. 1) is now the accepted author.

This Waxbill inhabits south-eastern Africa, being said by Stark to be migratory in part of its range, but resident in Natal and the Transvaal.

Sclater recognized five races, the Angola Yellow-bellied Waxbill (*C. m. bocagei*), the Kenya (*C. m. kilimensis*), the Uganda (*C. m. nyanzae*), and the Abyssinian (*C. m. quartina*) being the others.

Stark says, "In Natal this pretty little species is, when not breeding, usually met with in small parties of ten or twelve, feeding on the ground on grass-seeds. . . . This Waxbill breeds in Natal not uncommonly, but not, so far as I have observed, near the coast. Not far from Howick, at a height of about 3,000 feet, I have met with their nests in some numbers. Unlike many of the Waxbills, they build in tall bushes and young trees, at a height of from six to ten feet. The nests are rough-looking, oval structures, with an entrance hole on one side, constructed of fine dry grass. The flowering ends of the grass being woven together, the stiff stalks are left projecting in all directions. The interior is lined with grass tops, down, and feathers. The eggs are very small, pure white in colour, and four or five in number. When first hatched the young are fed on small caterpillars."

Dufresne's Waxbill was first bred in the British Isles by Miss Elsie Robinson, who wrote a good account of the occurrence for the *Avicultural Magazine* (1934, p. 249) and was awarded the Society's medal. Mr. H. S. Sewell bred it in Adelaide during the following

year (*A.M.* 1935, p. 182). The most recent published success (*A.M.* 1949, p. 9) was Mr. Dulanty's at Chorley Wood, Hertfordshire, when two broods were reared.

These articles contain valuable information on the care and breeding of this charming Waxbill.

* * *

BREEDING SUCCESSES AND FAILURES IN LOURENÇO MARQUES

By E. H. HAWKE (Lourenço Marques, Portuguese East Africa)

Although I appreciate all too well how boring accounts of breeding this and that can become, it does occur to me that some of the successes (and failures) in this part of the world, where, I think I am right in saying I am the only member, and which is probably not well known to many of your readers, might be of interest.

Lourenço Marques, the capital of Portuguese East Africa, is situated on the mainland some 250 miles (as the crow flies) north of Durban. It enjoys one of the finest climates of the world during four months of the year (May–August); is very pleasant during another four (March–April and September–October), but from November–February, it is not to be recommended. Our rains fall during the summer months except for odd showers and when it rains, it rains. Aviary drainage and shelters therefore need careful watching, otherwise there is a risk of finding oneself with accommodation more suited to fish than birds.

In all I have at the moment twenty-four aviaries, with another five about to be constructed. Four of these are planted, the largest measuring 15 feet by 45 feet by 18 feet. The rest, including those to be constructed, are in the main, breeding cages. They vary slightly in dimensions and shape, but roughly are in units measuring 4 feet by 8 feet by 12 feet, which can be combined if required to form larger areas.

From both the ornithologists' and aviculturists' point of view, Portuguese East Africa is an area which delights both the heart and the eye. Still, in many districts, comparatively unspoiled by the advent of man, there are some 900 different species of birds ranging from the lordly Ostrich down to the tiniest of the warblers, in greater or lesser profusion, and no matter where you may roam, it will be a rare exception if no bird is in view.

One would think that with such a wealth of bird life close at hand, no one in their sane senses would look beyond our boundaries for aviary stock, but what aviculturist is sane? Naturally my collection, which now comprises some 100 species and 500 birds, is made up mainly of locally procured stock, but I am always ready to accept

strangers, and I have a few representatives from Australia, India, and South America amongst my birds.

The largest of my planted aviaries houses hornbills (*Lophoceros asutus epirhinus*), rollers (*Coracias garrulus*, *Coraciura caudata*, *Eucoracias iosambicus*), weavers, starlings, bulbuls, doves, barbets and thrushes and the smallest, a wide variety including most of our waxbills and sunbirds. It is, of course, difficult to keep such mixed families on good terms with each other, and every now and then a dispute ends in tragedy but, by and large, they seem to get along reasonably well. Of course, I do keep the worst offenders to themselves, but it is quite astonishing—at least to me—how frequently one can find a real “bad-egg” amongst what normally is considered a peaceful species.

As I write, a new breeding season is upon us and there is activity in all directions. As usual, I am hoping for miracles but will, of course, be satisfied with whatever the fates permit. I hold crossed fingers for my African Greys, down on eggs for the fifth or sixth time, but who have never yet “delivered the goods”. I have hopes that my Lilac-breasted Rollers and Sunbirds will this season do something more than play at raising a family—a pastime which they apparently enjoy. I always feel that it is a poor reward for days spent rushing around the neighbourhood collecting cobwebs—arousing in the process the gravest suspicions amongst individuals who, at the best of times, are apt to look upon the aviculturist as not quite “all there”—and watching a beautiful nest grow before one’s eyes, to find the couple suddenly lose interest. Incidentally, I have in my aviaries Scarlet-breasted, Amethyst, Marico, Purple-banded, Neergaard’s, White-breasted, Collared, Grey, and Olive Sunbirds, and such attempts at nest construction that I have witnessed, both in the aviaries and out, have been the work of the female only. The male appears to spend most of his time urging his wife to greater and greater efforts, though he is never averse to passing the time of day with any other member of the opposite sex who might pass his way.

Just in case it might be of interest to fellow aviculturists, I list the species which have bred successfully in my aviaries, i.e. the young have perched and grown to maturity. Ruddy, Common, Orange-breasted, Blue-breasted and Jameson’s Waxbills, Hooded Finches, Red-backed Mannikins, Streaky-headed Seed-eaters, Melba Finches, Golden-breasted Buntings, Cut-throat Finches, Magpie-Robins (*Eopsychus saularis*), Red-vented Bulbuls (*Molpastes cafer*), Crested Barbets, Ring-necked and Laughing Doves, Speckled-backed and Golden Weavers, Speckled Colies, Peach-faced and Nyasa Lovebirds, Indian Ring-necks, Eastern Rosellas, Cockatiels, Brown-headed parrots (*Poicephalus cryptoxanthus*) and Blue-fronted Parrots.

There are innumerable others which have tried, some getting no farther than building a nest, others laying, and others even producing

young which for some reason or another have not made the grade. I am one of that group which does not believe in disturbing any bird that is about its business of raising a family, so I cannot provide much information regarding the number of eggs laid, incubation periods, etc. Food is of the widest possible variety; all kinds of seed, fruit, bread soaked in milk, minced meat, insectivorous foods, live food (grasshoppers, mealworms, gentles, white ants), greenfood, and there is something for all tastes, and it is surprising what some of them will eat. To me a Sunbird with a juicy piece of minced meat was something unexpected. Those which share the Sunbird aviary also enjoy the nectar mixture and fruit flies, and the bird that does not take some nectar certainly is the exception.

I do a certain amount of trapping myself but, having a business to attend to, the opportunities are few and far between. The natives, however, bring in specimens from time to time, and it is really on them that I rely for replenishing and adding to my collection. Fate also lends a hand, as one may judge from the following two incidents which may prove of interest.

I had been trying for some time to secure a Black-collared Barbet but could never find a native collector with sufficient intelligence to find one of the hollow logs in which these Barbets normally roost. One day, however, I was doing some writing in my study when our cook-boy approached with a bird clutched in his hand—a Collared Barbet, of course! As he had been walking through our back yard the bird had fallen at his feet, having apparently stunned itself by striking an overhead telephone wire. This in the middle of a fairly large town.

The second incident concerns a Narina Trogon (*Apaloderma narina*). I was telephoned one afternoon by my wife who, though she bears with my affliction, is not too well versed in bird identification, to say a Coucal was flying around our garden and the gardener thought he could catch it—should she permit the attempt. Not wishing to damp her enthusiasm, I agreed, and when I returned home about 5 p.m. I facetiously demanded to see the bird, only to be told that it had disappeared. My wife, however, insisted on my going out to see exactly where the Coucal had been spotted and lo, there was no Coucal, but a Narina Trogon. All forces were summoned, but the bird made off and I said good-bye to my hopes of owning one of those beautiful jewels.

Next day I was busy in my office situated in the centre of a very busy port area, when a friend walked in with a bird in his hand—yes, the Trogon. He had been walking along the street to see me on business when this bird flew into his stomach and stunned itself. Admittedly the target was of no mean size, but what luck. Both birds lived in my aviaries for a number of years.

REARING THE YELLOW-CHEEKED AMAZON

(Amazona autumnalis autumnalis)

By E. N. T. VANE (Great Missenden, England)

The Yellow- or Primrose-cheeked Amazon is found fairly well distributed in south-east Mexico and the northern areas of Central America, but only occasionally are odd specimens available in this country. According to Peters' *Check List* it is only regarded as a sub-species to Salvin's, Lesson's or Lilacine and the Diademed Amazons, but it is without doubt by far the most handsome of the four.

The body colour is a bright green, lighter on the under parts. The frontal band is a bright cerise, the crown a delicate pale lilac blue, the edge of each feather being darker. This colour merges into the green of the nape and mantle and again these feathers are emarginated with a blackish shade. The cheeks are chrome-yellow extending from the bill below the eye to the ear-coverts, this area being flecked with cerise in some cases. On the bend of the wing is a patch of pale yellowish-green. The primaries are bluish and there is an orange-red speculum. The tail is green, lighter on the underside and yellowish towards the tip. The bill is yellowish horn with blackish areas on the upper mandible. The eye is brilliant gold which can vary considerably, sometimes when excited the pupil becomes very small and the iris literally blazes, at other times the colour appears to separate into two rings of red and yellow. The eye is surrounded by a narrow, white skin orbital area, and in some birds the eyes appear to have distinct lashes. The feet are grey, with black claws. The sexes are alike, though cocks are larger in the head and bill. Immature birds resemble the parents in all details, except that the eye is dark brown and the bill darker towards the point of the upper mandible. Some specimens have traces of yellow on the throat. Length is about 14 to 15 inches.

The pair of birds in my possession started laying when they were about three years old. They have twice succeeded in hatching young previously, and have had young dead in shell every other season; the eggs have always been fertile. The cock is most aggressive in the breeding season, indeed he is always seeking the opportunity to attack someone or something and frequently vents his spite on his poor hen, who is a charmingly friendly bird by comparison. His favourite amusement is to knock her off the perch and watch her climb back. She accepts this as normal good manners, and always takes her time to come back within his reach. She regards any outside interference in this procedure as unwarranted between husband and wife, and is always ready to join him in a cursing match. This trait is probably the cause of their repeated failures to rear their young, as

every year just as the hen should be incubating, it is time for the adjoining land to be ploughed or sown, and this is the signal for the cock to start his nonsense. They are both good talkers, and have taught several of the other birds to talk as well. It is always amusing to hear the cock encouraging the hen in the depths of the nest box and to hear her muffled replies coming back. But every time he starts swearing at the farm hands over the hedge, or any other intruder such as a cat, fox, or other visitor, the hen immediately joins him and comes off her eggs. Unfortunately, this amuses visitors, who are of course, entirely unauthorized, and they linger and talk to the parrots and are frequently indignant when asked to clear off.

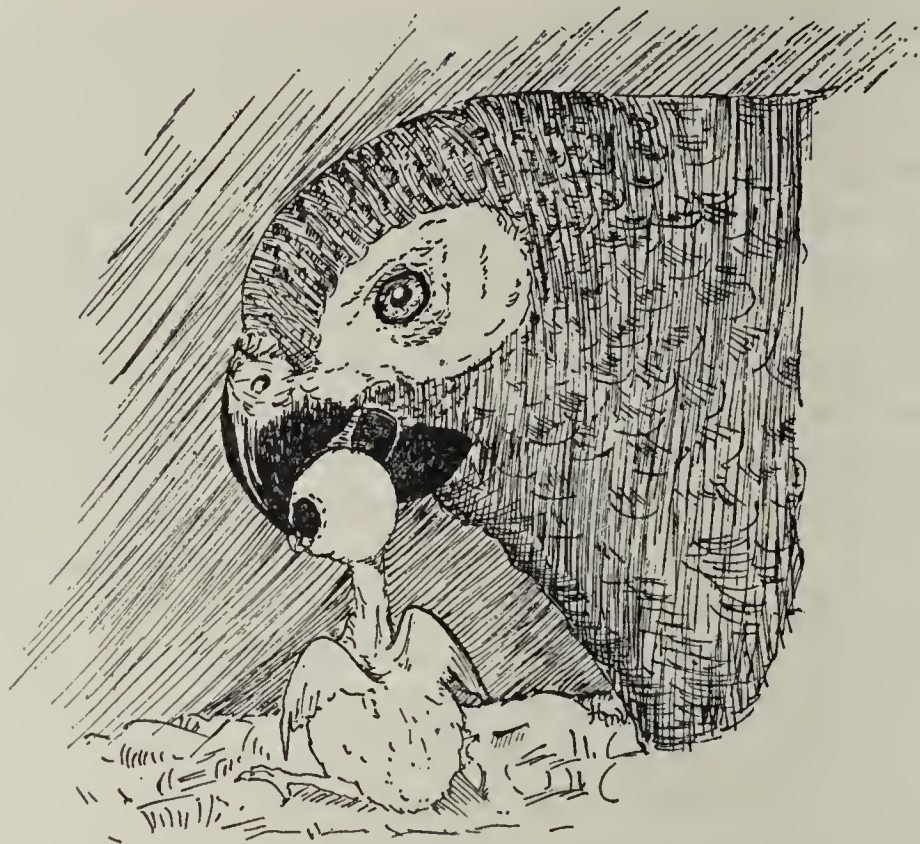
Last year our Grey Parrot laid two clutches of eggs on the floor of her cage—one of the usual 18-inch square type—and incubated them assiduously. Naturally these were abortive as she had no mate but we decided to take advantage of her exemplary behaviour provided she laid at the same time as the Amazons. "Polly" would not tolerate any form of nesting material for her eggs; wooden nest-pans and shallow boxes of peat, sand, and rotten chips were tried, but she laboriously removed the lot or pushed them aside. Again she laid this Spring, rather earlier than usual, but it coincided with the Amazons nesting in their flight (which is only about 18 feet long with a nest-box outside; they seem to prefer to climb though both are excellent fliers when so inclined), so we put our intention to exchange the eggs into operation; there was little to lose, anyhow, and sure enough they started to plough the field three days after incubation should have started.

Collecting the Grey's eggs was a simple matter, she never minded anything I do to her, and when the eggs were removed she just got up on the perch and had a good feed. She really was not perturbed and seemed to be quite confident that I would return the eggs unharmed in due course. Getting the Amazon's eggs was quite another matter altogether. The box was outside the flight, covered externally with an asbestos sheet in case the birds whittled their way right through a task well within their powers, as they strip a three-inch perch in a day and soon finish it altogether; but strangely enough they have had this same nest-box for seven seasons and have scarcely damaged it beyond enlarging the entrance hole. After several attempts to manoeuvre the birds away from their box, we finally succeeded in stuffing a sack in the hole from the top of the box and removed the eggs with a long-handled ladle, replacing them with the infertile Grey's eggs. There were only two Amazon eggs, their usual clutch being three. These were duly given to "Polly" on the thickly sand-covered floor of her cage in the living room on 27th May, when she promptly started incubating closely. Meanwhile the Amazons carried on as in previous years. The hen duly retired to the box, but the cock was

so aggressive and demonstrative that she was constantly coming off to see what all the bother was about. On 16th June, she was off for quite a lengthy period, and after the usual ceremony of the cock knocking her off the perch, I decided to have another look. She had laid a third egg which was again removed. I had taken the precaution of marking the eggs, which were almost identical in size and appearance. The Grey's were possibly a little more rounded, but it would have been most difficult to distinguish them with any degree of certainty. This occurred during a very hot spell of weather when the Amazon was sitting very lightly, in fact almost appeared to desert for a few days, although she brooded every night. It is possible that these birds, coming from a very hot climate, might well rely on the heat of their surroundings to keep their nest warm for quite lengthy periods during daylight hours, and this may account for their unsatisfactory results in this country in other years.

"Polly" sat very closely in the corner of the room we used daily. She was perfectly friendly and normal, and used to come off and feed regularly every morning when her bowls of food and water were renewed. She still liked to have her poll scratched, and once this was done, she immediately settled down to her task once more, and was left undisturbed for the rest of the day. This was exactly as she behaved on other occasions.

Mr. Arthur Lamb has recorded that when he bred an Amazon the incubation period was twenty-one days, so we calculated that these eggs were due to hatch any time after 19th June. About this time "Polly" started to soak her breast and thigh feathers each morning, and since she did not resent my help, the eggs were floated in a bowl of warm water for a few minutes. One sank and the other two floated. I have not found this a reliable method of determining whether the egg will hatch or not, but mention the fact for what it is worth. The Grey immediately returned to her eggs when they were replaced. On the 22nd the eggs were again submitted to this treatment, and on this occasion there was a most definite movement in one of the floating eggs and I could hear a definite tap from the interior. On Sunday the 23rd, one egg had a clearly visible chip, and I could hear the young bird squeaking inside the shell. Shortly before midday, whilst I was out, the first little Yellow-cheek broke through. It was assisted by the foster-mother who very carefully cut the top out in a small circle, so that the young one wriggled through a hole leaving the shell in two clean pieces. Of the other two eggs, one was clear and one addled in the early stages. It is therefore assumed that the latter was the egg removed on 16th June, which had been spoilt by the unreliable sitting habit of the Amazon hen, and that the fertile egg was removed on 29th May, together with the infertile one. So the incubation period was twenty-five to twenty-six days.



STAGE I. FIRST FEED.—The young bird is lifted bodily by the head. The point of the bill is forced between the young bird's mandibles at the back, and liquid is regurgitated and trickled down the tongue from the other side into the mouth.



STAGE II. SECOND FEED.—Parent takes tip of young's bill and starts jerking head with pumping action.

The African Grey was entirely calm and unperturbed with her accomplishment, she behaved like an experienced mother, never in the least worried but obviously very pleased with the result of her patience. She brooded the chick very closely, making no attempt to feed it for the first twenty-four hours, although she repeatedly cleaned it. She moved it about by lifting it bodily by the head. She was supplied with the usual seeds, bread and milk with Abidec added, also soaked brown bread, with sprouted seeds and greenfood, which she enjoyed and consumed in increasing quantity as the youngster progressed.

We now had a unique opportunity to observe exactly how a parrot goes about rearing its young, as the whole of the operation was carried out oblivious to our close interest and observation. The parent bird was completely absorbed in her task, and did not resent our presence in the least. The first feed was given on the second day. The young bird was first lifted bodily by the head, and the point of the parent's upper mandible was then gently inserted into the small gap of the youngster's mandibles right at the rear as shown in sketch 1. She then trickled liquid down her tongue into the opposite side of the baby's mandibles. Once the young bird started feeding thus, this procedure was no longer necessary and as soon as the mother clucked, the young one instinctively raised its head and gaped ready to accept food. Taking the tips of the mandibles in her beak the mother then applied the usual pumping action of regurgitation and one could actually watch the young one's crop fill out (see sketch 2). At this stage feeding was carried out with unfailing punctuality every two hours. The consistency of the crop milk was about the same as that of ordinary milk. For practically the whole of the first two weeks the Grey brooded continuously, but thereafter left the nest for a while for longer and longer periods. Feeding intervals were slowly increased to three hours, until six weeks had passed, when the meals were increased in frequency, but decreased in bulk. During this time, too, the consistency of the food was also thickened. By this time the young bird was becoming very intelligent and knew full well that every time the mother had something to eat, it would get a taste, and it was not backward in asking for its share.

At about ten days, the eyes began to open and quills began to appear. At this stage we were a little apprehensive that the difference in colour might upset the mother. We need not have concerned ourselves, however, as "Polly" was a most attentive and competent parent. The floor of the cage became littered with seed husks, but no attempt was made to clean it out for the first month in case she resented it. I was in fact away at the time, and no one else dared put hand inside the cage, this applied whether she had a youngster or not. At a month old, the squab resembled nothing more than a dirty

looking pin-cushion, and was extremely awkward-looking and ugly but "Polly" thought it was the loveliest thing that ever happened and she spent hours cleaning it.

The young one grew rapidly, and as the feathers opened out the young bird was deliberately taught to preen itself and was always in spotless condition. The plumage was complete at seven weeks, exactly similar to the adult bird's, except that the flight and tail feathers were not fully developed. The young bird was just over eight weeks old when it first succeeded in climbing on to the central perch—an age at which it would normally have reached the stage of peeping out of the nest hole. Its bill was blackish on the upper mandible, yellowish at the edges and towards the point. The eye was dark and the feet grey. On its breast it has a few yellowish feathers. The fact that its plumage is similar to the adult was interesting, as according to some accounts, many Amazons are reputed to be all green when immature and to assume full colour when a year or more has passed.

* * *

DARENTH-HULME, 1957

By KAY BONNER (Southgate, England)

Year after year numerous members inform us either that they have had a good breeding season or that they are satisfied with their results. I am afraid we are never completely satisfied—but we are ourselves mainly to blame that our results fail to come up to our expectations because we keep far too many birds. We seem to have a faculty for accumulating them!

During the winter all the pheasant pens and pigeon flights were entirely rebuilt, the passage at the back of the main aviaries was reconstructed and divided into six compartments, and a Caique house with flight was built. It now only remains to overhaul completely the main aviaries, but that is a project we do not view with equanimity.

Last winter was, of course, comparatively mild, and our losses directly attributable to the cold were remarkably few. We did, however, lose our Egyptian Plovers, a Natal Robin, a Black-headed Sibia, and a Golden-breasted Bunting—all these in the wilderness aviary.

The occupants of the main range of parakeet aviaries are Green-winged Kings, Crimson-wings, Queen Alexandra's, Pennant's, Bauer's Cockatiels, Tavis, All-Green, Golden-winged, Lineolated; Patagonian Weddell's, Cactus, Black-headed and Yellow-cheeked Conures, Noble Macaws; Fischer's, Masked, Peach-faced and Abyssinian Lovebirds; and Lesser Hill Mynahs and Chinese Collared Laughing Thrushes.

Few of the parrakeets made any great success of such attempts as they made to breed. The Pennants produced their usual brood, but whereas in the previous four years the young have left the nest in full, adult plumage, the four young this year were somewhat undersized, mottled dark green and red. All the Lovebirds increased their kind, but none of our pairs may be described as prolific. The Noble Macaws laid three eggs, but scattered them at an early stage of incubation. The colony of Lineolated Parrakeets just holds its own, a brood of three ate in September making up for earlier losses.

The Red-faced Lovebird colony, numbering thirty-four, is a continual source of interest. Last year's success when one young one was reared has not been repeated, but it is not yet too late.

A few new birds have been added to the wilderness aviary: Hildebrandt's Starlings, Chinese Hawfinches, Pekin Robins, and Red-collared and Yellow-backed Whydahs. Here the Common Mynahs reared broods of two and one; the former very rickety, the latter a perfect bird. Purple-headed Glossy Starlings had several broods, but only succeeded in rearing one young one which was later scalped. Many Zebra and other small finches leave the nests, but the majority quite unaccountably disappear—presumably falling victims to some, as yet, undetected predator.

The numerous pheasants, quails, bantams, pigeons and doves, both domestic and foreign, continue to thrive and, in the main, increase.

Our one real success, the breeding of the Green Imperial Fruit Pigeon, made up for any disappointments. The young one hatched on 1st September (see page 148) left the nest on the 22nd, and is as fine a bird as the first reared. We now have fourteen of these somewhat voracious pigeons, seven Green Imperial, and seven Pied Imperial. The latter laid fourteen or fifteen eggs, but failed to hatch any.

The most important recent arrivals are four Black Bronze-winged or White-capped Ground Pigeons (*Henicophaps albifrons schlegeli*) brought from the Aru Islands by W. J. C. Frost. At present they are very travel-stained, but eventually they should prove to be very handsome birds.

The bird-rooms at present house seven White-bellied and four Black-headed Caiques, five Senegal Parrots, one Mayer's Parrot, one White-winged and three Canary-winged Parrakeets, three Black-cheeked Lovebirds, and one Greater Hill Mynah. Amongst our house parrots we suffered the loss of our favourite Grey "Cocotte", a venerable and very talented "lady" well known to many members of the Society.

A NEW MUTATION OF THE GOLDEN PHEASANT

(Chrysolophus pictus luteus)

By ALESSANDRO GHIGI (Bologna, Italy)

Adult Male.—Crest golden yellow slightly lighter than in the typical form ; rest of face, chin, throat and sides of neck, light yellow ; cape orange with the two steel blue bars as in the Golden Pheasant ; mantle dark green, with the lower portion of each feather yellowish ; lower back and rump golden citron yellow ; central tail feathers pale brown dotted with light yellowish ; other tail feathers irregularly barred with pale brown and yellowish ; upper tail coverts same colour as central tail feathers in the lower web, with the upper web yellow ; scapulars yellowish tipped with brown ; tertiaries and their coverts dark brown ; secondaries and their coverts barred with more or less dark brown ; primaries light straw yellow ; all body feathers yellow, lighter in the middle of abdomen and on the lower thigh ; tail-coverts yellow. Iris, wattles, and bare skin around orbits yellow ; beak and legs yellow horn.

In substance, the more remarkable differences between this mutant and the typical form are the total substitution of a yellow colour for the scarlet, a dark brown for the blue of the wings, a citron yellow for the rich yellow of the back, a pale brown for the black of the tail and wing-feathers, and the straw yellow primaries. Crest and cape are the same as is the visible portion of the green mantle.

Young male.—General surface colour straw-yellow, very slightly barred with pale brown in all sections. On the sides of head yellow orange shades are noted. Wing and tail feathers have the same pattern as the typical form, but are extremely light-coloured with alternative bars or lines of brown and straw yellow.

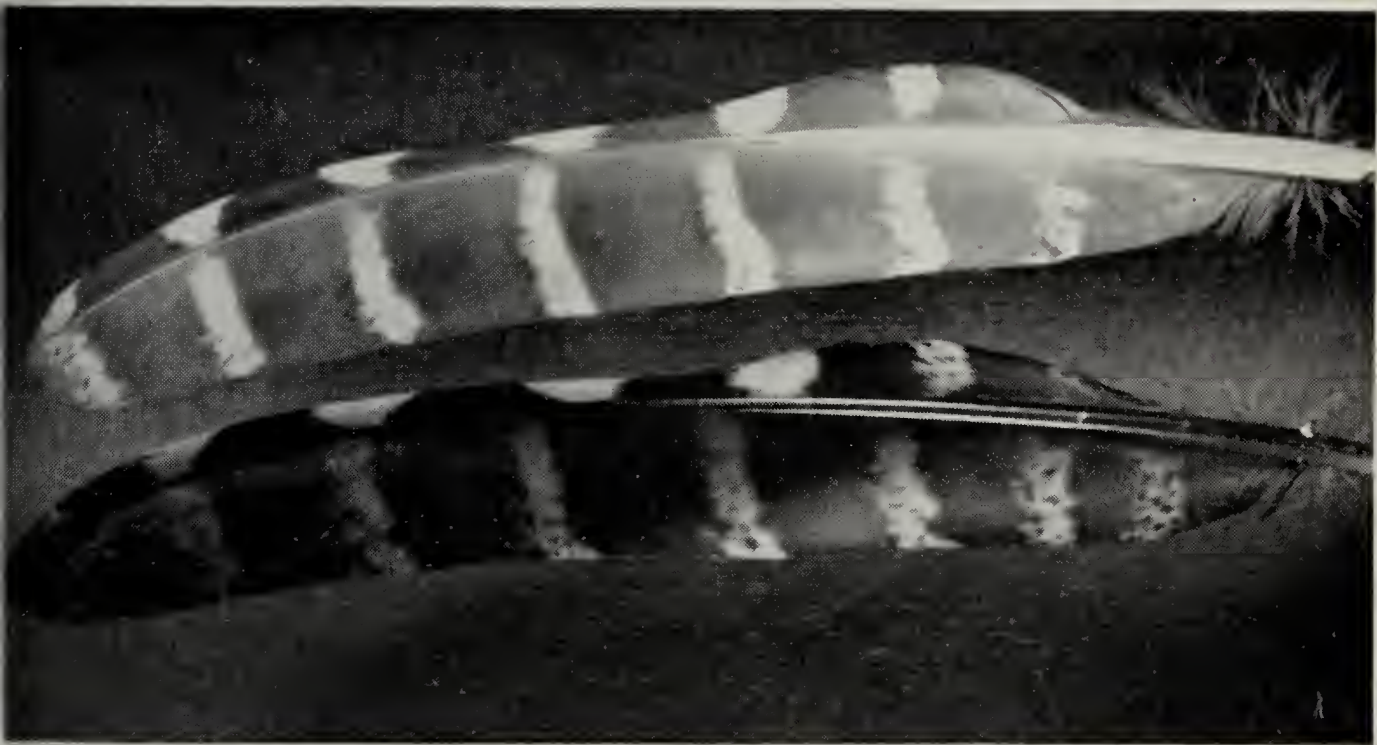
Adult female.—Same pattern as in the typical form, but the general surface colour instead of being buff barred and mottled, more or less plentifully with black, appears straw yellow, barred and mottled with brown, more or less pale according to the specimens and to the sections of the body considered. Primaries and secondaries, pale brown barred crosswise with straw yellow.

Chick.—Creamy white at birth ; as soon as the epitrichium of the filoplumes has split the mottling appears the same as in the normal chick, but in much lighter shades.

Origin.—The mutant male, first of the race, was brought to me, already adult, by Mr. Alexander Hampe from Coburg, in 1952. Having had an inkling of the matter through an advertisement issued in an avicultural journal, he thought I would be interested, and brought it to me. I was not able to obtain information about the place of origin, but it seems to have been in Bavaria.



ADULT COCK MUTANT GOLDEN PHEASANT



PRIMARY WING-FEATHERS—(above) MUTANT FEMALE, (below) NORMAL FEMALE.

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Breeding.—In the spring, 1953, a young normal golden female mated with the mutant did not lay eggs ; in 1954 an offspring of the usual colour resulted, whence it was shown that the mutant sire was recessive. Two heterozygous females of this generation were mated with their sire ; I entrusted Professor Taibel, Director of the Experimental Poultry Station of Rovigo, with one heterozygous male and two heterozygous females.

In 1955 my heterozygous hens produced normal heterozygotes and recessive mutant homozygotes in the same proportions ; Professor Taibel obtained in Rovigo 75 per cent normal dominants and 25 per cent homozygous recessives.

In the spring of the following year, 1956, it was confirmed that the mutants are homozygous, as both my young mutant specimens and those from Rovigo (Taibel) exclusively produced mutants.

My breeding was not very successful in 1956. The old cock, maybe because of the terrible cold suffered during the winter, did not fertilize the eggs of the first brood, but all the eggs laid by the hens mated with the young male were fertilized. Furthermore, various accidents caused the death of some chicks during the rearing season. Anyway, excluding the first of the race, we now possess two adult males and three adult females, three year-old males and six year-old females. Altogether we have, the first of the race excepted, five adult males and nine adult females. I have sent one adult male and two young females to the Zoological Garden of Rome ; furthermore, last spring, I shipped a pen formed by one male and two females, all heterozygous of the usual colour, to the Zoological Garden of Copenhagen, from where I have not yet had news concerning an eventual mutant offspring.

Some further observations may be added :

(1) The adult male, that lives now in the Zoological Garden of Rome is not perfectly similar to the sire ; some feathers of the throat show a brown edging, so that the bird appears to have a small collar in the throat.

(2) The plumage colour is not of the same richness in all the female specimens ; some have darker bars compared with others. One must consider that the first mutant cock, arising from normal forms, may carry some multiple factor, to which a further variability is due.

The above facts will be the subject of careful control in the next, 1957, breeding season.

Note.—In this breeding season (1957) I have reared about fifty mutant chicks.

NEWS FROM THE BROOKFIELD ZOO

By KARL PLATH, Curator of Birds (Brookfield, Ill., U.S.A.)

“What’s new at Brookfield this year?” This question can be heard every year, for each year a new attraction is added for the benefit of the public. Last year an Okapi, before that the Otter Grotto, modernistic but attractive, before that the enormously popular Children’s Zoo, a flock of the delightful, tiny Fairy Penguins (about 10 inches high), a generous gift from one of our benefactors, Sir Edward Hallstrom, of Sydney, Australia, then from the Ueno Zoo in Tokyo came Emperor and Adelie Penguins. So now we have the extremes in size of these fascinating birds, for the lovable little Fairy Penguins scarcely weigh 2 pounds, while the largest of our three Emperors (about 4 feet high) weighed 80 pounds on arrival, and feels like a sack of sand when one bumps against it. Comparing the Emperor with the smaller King Penguin shows that the former has much more bulk, while the slimmer King which is about 10 inches shorter weighs on an average of 35 pounds. The Emperors, Kings, Adelies, and Humboldts occupy a large, glass-fronted cage about 30 feet across and 10 feet deep, with a glass-fronted pool almost as large, where they disport themselves with abandon. This enclosure is kept at a temperature between 50° and 60°, usually 54° (fahrenheit), with germicidal lamps for germ-proof atmosphere and filters for pure air. The Fairy Penguins are kept in winter in one of the wall-cages (about 15 feet long), and in summer are active in one of the larger pools.

But this article is to tell members of our latest remodelling—that of the Perching Bird House which attracted considerable attention about ten years ago in the making of a series of “picture-cages”, twenty of them along the east and west wings of the building. These are metal-framed, glass-fronted cages and are used for individual specimens best kept apart, such as the toucans, hornbills, several birds of paradise (also gifts from Sir Edward), and others. Now the effect is a long gallery of animated pictures, the subjects living birds behind their glass fronts. The lights are in the cages, and the passage dark. A large double door is at each end, but the main entrance is at the centre of this long gallery. When the visitor enters here he sees at first, or is aware of, large glass cages on each side of the door with numerous colourful small birds but he is mainly attracted to the huge “Freedom Room” which confronts him. This has no wire, no glass, and a portion of the picture gallery floor of beautiful terrazza extends into this open aviary. This has a railing to prevent the visitor from stepping down into it. In former years this large room had thirty-three wire-fronted cages all around it and a medium sized flying-cage in the centre. The alteration was started early in 1956, and opened to the public



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[Ralph Graham

THE EAST END OF THE "FREEDOM ROOM" IN THE PERCHING BIRD
HOUSE AT THE BROOKFIELD ZOO.

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Christmas Day, 1956. The construction is of stainless steel and plate-glass, and the effect is very elegant.

This main room has been transformed into a garden of exotic plants and flowers. There are three trees with bare branches for perching and a tall hollow tree in one corner partly hidden by a large date palm. There is more than one ground level—a little pool in a corner the top trickles into a larger one below it, and that again flows into a large pool which overflows by means of a gurgling waterfall into the largest pool immediately in the foreground beneath the rail. Umbrella plants, banana plants, anthuriums, various aquatic plants, and many kinds of flowering plants border these pools and add to the tropical effect.

To keep the interest below there are several striking aquatic birds—Scarlet Ibis, Jacanas, Stilts, Crocodile Birds, a pair each of Mandarin Ducks, Formosan Teal, and several others. These birds are content to stay in the water or on the ground, with the exception of a tame and fearless Sun-Bittern which often perches on the rail and sometimes tolerates a little petting. In the trees and flying all about are other beautiful birds—gorgeous rollers, motmots, Quetzal, barbets, touracos, and a brilliantly red Cock-of-the-Rock which often flies into the gallery. Several other birds do this, Giant Whydahs, Long-tailed Parrots, tanagers, Vermilion Cardinals, and some others, but all seem content to fly back and enjoy this brilliantly lighted bird paradise. The great skylight 30 feet above protects the birds from flying up against it and being covered with plastic waffle-like panels. There are four double 60 watt lamps in the wall above, not too noticeable, and several more lamps set below the floor under the railing beneath the floor. Most of this light in the big cage makes the gallery comparatively dark, so that most of the birds are happy to stay in the open-front aviary. This improvement has worked wonders with the public, who are delighted and amazed when a brilliantly plumed Quetzal or touraco turns their heads as it swoops by. Seemingly the birds have never been more enjoyed.

Of course we had to consider the nature and habits of the birds that were to be at large, and they had to be compatible. We knew that the jays and other large omnivorous birds would not be desirable, nor would most of the seed-eating finches which would also nibble at the plant life; so for these classes of birds there are other large community glass cages, to accommodate various jays, oropendolas, blue-jays, Australian butcher birds, and two smaller cages housing the larger orioles, tanagers, and grosbeaks. For humming birds, sunbirds, and callistes we have twelve comparatively small cages, as most of these species do best kept separately. Our most interesting humming bird to date is the very tiny Vervain from Jamaica. Generally speaking, it is our opinion that sunbirds do better; they are

equally beautiful though, of course, do not have the rapid wing-beat of the hummer.

Our Parrot House, while one of the Zoo's older buildings, still houses a good collection. One outstanding member is a beautiful Guilding Amazon (from the Bronx Zoo), and in all we have forty-six species (240 individuals) in this building. We are fortunate in being able to keep all of these parrots outdoors from May to October, and have had good luck in breeding many of the larger Australian psittacines as well as others; outstanding being Grand Eclectus, Grays, and Rosea Cockatoos—unusual for this latitude.

Later on we hope to do an article on the varied species in the beautiful Aquatic House; we did do something on this years ago but many rarer specimens have been added.

A list of the birds living in the "Freedom Room" at the Chicago Zoological Park, Brookfield, Ill. Apparently compatible. Regardless of scientific order.

Koel	<i>Eudynamis scolopacea</i>
Senegal Coucal	<i>Centropus senegalensis</i>
Bleeding-heart Pigeon	<i>Gallicolumba luzonica</i>
Mourning Dove	<i>Zenaidura macroura carolinensis</i>
Hartlaub's Touraco	<i>Tauraco hartlaubi</i>
Purple-crested Touraco	<i>Gallirex porphyriocephalus</i>
Lilac-breasted Roller	<i>Coracias caudatus</i>
Indian Roller	<i>Coracias benghalensis</i>
Blue-cheeked Barbet	<i>Megalaima asiatica</i>
Toucan-Barbet	<i>Semnornis ramphastinus</i>
Turquoise-browed Motmot	<i>Eumomota superciliosa</i>
Great Rufous Motmot	<i>Barythengus martii</i>
Blue-crowned Motmot	<i>Momotus caeruleiceps</i>
Satin Bower Bird	<i>Ptilonorhynchus violaceus</i>
Regent Bird	<i>Sericulus chrysocephalus</i>
Gold-fronted Green Bulbul	<i>Chloropsis aurifrons</i>
White-eared Bulbul	<i>Molpastes leucotis</i>
Red-vented Bulbul	<i>Molpastes pygæus</i>
Fairy Bluebird	<i>Irena puella</i>
Quetzal	<i>Pharomachrus costaricensis</i>
Troupial	<i>Icterus icterus</i>
Moriche Oriole	<i>Icterus chryscephalus</i>
Madagascar Wagtail	<i>Motacilla maderaspatensis</i>
Tri-colored Starling	<i>Spreo superbus</i>
Long-tailed Starling	<i>Lamprotornis caudatus</i>
Yellow-tufted Honey-eater	<i>Meliphaga melanops</i>
Vermilion Cardinal	<i>Richmondia phoenicea</i>
Rufous-backed Robin	<i>Turdus rufus-palliat</i>
Pekin Nightingale	<i>Leiothrix lutea</i>

Silver-eared Mesia	<i>Mesia argentauris</i>
Brazilian Scarlet Tanager	<i>Ramphocelus bresileus</i>
Orange-rumped Tanager	<i>Ramphocelus flammigerus</i>
Giant Whydah	<i>Diatropura progne</i>
Golden-backed Woodpecker	<i>Brachypternus benghalensis</i>
Yellow-backed Cacique	<i>Cacicus cela</i>
Red-legged Rail (Black Rail)	<i>Limnocorax flavirostra</i>
Crocodile Bird	<i>Pluvianus aegyptius</i>
American Jacana	<i>Jacana spinosa</i>
North American Stilt	<i>Himantopus himantopus mexicanus</i>
South American Stilt	<i>Himantopus himantopus melanurus</i>
Golden Plover	<i>Pluvialis apricaria</i>
Scarlet Ibis	<i>Guara rubra</i>
Mandarin Duck	<i>Aix galericulata</i>
Formosan Teal	<i>Anas formosa</i>
Red Cock of the Rock	<i>Rupicola sanguinolenta</i>

There are from one to five of each of the above birds in this Freedom Room". We did try a magnificent Racket-tailed Drongo, but the first thing he did was to snap up two tiny Painted Quail, and he was removed pronto. We would like to mention here what I think is the longevity record of a Spiny-cheeked Honey-eater which lived from May, 1934, until December, 1956. With such a record, I would not trust his safety with other birds, nor would I do so with a Hardwicke's Green Bulbul received in October, 1936, and still in perfect plumage as was the Honey-eater.

* * *

NOTES FROM THE WILDFOWL TRUST

By S. T. JOHNSTONE (Slimbridge, Glos., England)

In the ten years that we have had a collection at Slimbridge, 107 forms of wildfowl have nested, and of these 100 kinds have been reared. Whilst a number of species have been reared for the first time in Europe, perhaps our greatest contribution to aviculture has been the re-establishment of the Hawaiian Goose (*Branta sandvicensis*) from the three birds presented to us by Mr. Shipman in 1949. Fifty-five birds have been reared, representing an estimated third of the world's population. Twelve have been reared by Mr. Terry Jones at Beckford, in whose care we placed a pair of birds some three years ago. Bearing in mind the possible loss of the Slimbridge flock from epidemic causes we have established pairs at our Peakirk branch, at Clères, and with Mr. Schuyt at Rotterdam; a pair has been returned to America under the care of Dr. Dillon Ripley. The Hawaiian Goose is probably the world's second rarest bird, and consequently the Trust is very proud of its effort in the attempt to save this beautiful goose from extinction.

1957 has been far and away our most successful breeding season. No doubt the improved breeding results were aided by the glorious weather of May, June, and early July, so that by the time the bad weather of August arrived the majority of the young birds were fully feathered and past danger.

But we must record a new method of feeding the young birds. All were reared entirely on dry Turkey Starter crumbs, and certainly it would seem that this had a very beneficial effect, not only on the numbers reared, but also on the rate of growth. Over 750 birds have been reared, representing 75 per cent of those hatched. The figures are as follows :—

<i>Kinds breeding.</i>	<i>Kinds reared.</i>	<i>Cygnets and Goslings reared.</i>	<i>Ducklings reared.</i>
91	72	195	583

Failure was recorded with the Bewick's Swan (*Cygnus columbianus bewickii*), the first clutch of five eggs being spoilt when the sitting pen was disturbed by the many visitors who came to the New Grounds this summer. The second clutch of eggs were unfortunately infertile.

A further disappointment was the loss of nine of the fourteen Ne-ne that hatched, owing to a heavy burden of tapeworm. On the other hand, the Magpie Geese (*Anseranas semipalmata*) have been extremely successful : six birds have been reared by foster mothers and a further five by the parent birds.

The Australian Grey Teal (*Anas gibberifrons mathewsi*) has been reared for the first time, and two drakes and a duck have been added to the collection. The Ringed Teal (*Anas leucophrys*) did very well, and we have added thirty birds to the original stock.

From our own point of view the most interesting species that we were successful with was the Smew (*Mergus albellus*). We have had a wild-caught female and three males at Slimbridge for the past six years, and although in recent years the female showed signs of getting "heavy" it was not until 1957 that she nested. In a small barrel some 2 feet from the ground the first egg was found on 12th June, closely resembling that of Carolina (*Aix sponsa*) in size, colour, and texture. Altogether five eggs were laid. A large amount of down was pulled after the third egg. The parent bird was allowed to sit on the eggs for the first ten days, and they were then removed and incubated under a bantam in the normal way. The incubation period lasted twenty-six days, and all five eggs hatched, the ducklings being extremely like young Golden-eye (*Bucephala clangula clangula*), the downy pattern being identical. Two ducklings soon fell behind and died, but the remaining birds thrived. Their early diet was fresh-water shrimp with trout fry, the fry being increased in size as the birds grew. Turkey Starter crumbs were also given, and when the

birds were feathered the trout were replaced by sections of live eel—the diet that is given to the rest of the Sawbills in the collection. All three birds are now well established.

At Peakirk, some nine miles north of Peterborough, we have laid out eleven acres of Waterfowl Gardens, and established a collection of seventy-five species of swans, ducks, and geese. Here a promising start has been made with breeding waterfowl, and 146 birds of fifteen species have been reared.

* * *

1957 BREEDING RESULTS IN THE HALLSTROM COLLECTION

By Sir EDWARD HALLSTROM (Sydney, N.S.W., Australia)

Perhaps the most interesting experience I have had this year has been with the Golden-shouldered Parrakeet. The cross between the Golden-shouldered and the Hooded has proved to be fertile, and some youngsters from this cross are now fully matured. I have tried to cross the Golden-shouldered and the Many-coloured Parrakeet; I found that the older Golden-shouldered male would have nothing to do with the Many-coloured females. It then became necessary for me to rear youngsters of both birds together and now, after several years of waiting, I have three pairs that I feel quite sure will take up housekeeping in a very short time, as the males are already driving the females. My stock of Golden-shouldered Parrakeets has increased to fifteen pairs plus a few extra, odd males. Young Golden-shouldered barely a year old have gone to nest, and have reared youngsters. The cross between the Hooded and the Many-coloureds apparently are infertile. I have had at least a dozen pairs go to nest, without producing a single chick.

Some of the interesting birds I bred last year were some Red and Blue Macaws, Red and Yellow Macaws, Blue and Yellow Macaws, and more Glossy Black Cockatoos. One Banksian Cockatoo was completely reared by hand from the day it was hatched. Its mother took no interest in the baby; we undertook the job for her.

There were four Red-bellied Conures, four Cactus Conure crosses, as before, a great many African Lovebirds—Fischer's, Peach-faced, Masked, and Nyasa. Five African Grey Parrots, with three more babies in the nest at the moment, and three baby Cloncurry Parrots. For years I have wanted to breed the Cloncurry, but never seemed to be able to get a female. At last I have three females, and to-day one pair are sitting, a pair only a year old have gone to nest, and another nice pair have mated and are very interested in the nest-box.

Several years ago I sent out a very carefully planned expedition and procured some Blue-cheeked Rosellas; two pairs, one of which are only twelve months old, are now sitting on eggs. I had never seen Blue-cheeked Rosellas before. They are not even mentioned in Cayley's book, *What Bird is That?*, but they were recorded by Gould. I hope that within a week or two I will have established the first breeding record.

A few days ago, on making a check through my nest-boxes, I found many young Eclectus Parrots, a number of eggs, and a great many of the commoner Australian parrots. I have also two pairs of Yellow-winged Conures. There are at the moment five pairs of Macaws sitting on eggs.

I have another interesting youngster in the nest, about twelve days old at the moment—a Ribbon-tailed Bird of Paradise (*Taenia paradise mayeri*). This, of course, is the first to be bred in captivity, and I am glad that the credit goes to me. They are in an aviary with quite heavy undergrowth. The female chose a very thick privet bush in which to build. She was supplied with ample nesting material, and built a nest quite 9 inches across, cup-shaped, the middle of the nest is no more than 2 inches deeper than the rim.

It took quite a long time to understand the mating habits of these birds by actual observation. Mating usually takes place after an attractive display by the male, and in the case of my birds, of which there are two more pairs sitting at the moment, was finally completed on the ground whilst the birds were locked together by the feet in such a manner that caused me to misunderstand the mating for fighting, which perhaps delayed my success with this particular species.

After mating, the male takes no further interest in the female, the nest or the youngster. Special food, a mixture of fruit and yolk of egg, was supplied, with a small handful of mealworms. The male apparently has respected this food and left it entirely alone, eating only the standard Bird of Paradise food that is provided in the ordinary way.

The aviary is about 30 feet long, 9 feet wide, and 7 feet high. The whole of the floor is concreted; along either side of the aviary is planted privet, and other shrubby plants, in beds 12 feet long. These were built up from the concrete some 18 inches, leaving plenty of soil for the privet. The rest of the aviary was covered with leaf which soon became mould; the mould is allowed to build up to between 2 and 3 inches; this becomes a wormery, as literally thousands of earthworms breed in this litter. It is necessary, of course, to keep it moist every day, for the worms to thrive. The female turns the leaf over, and she is to be seen quite regularly pulling worms out of the leaf mould which she completely swallows and later regurgitates as food for the baby. Around the roots of the privet I throw large

numbers of termites daily, and also supply large white grubs, giving the parent a wide range of food from which to choose.

The youngster when hatched was a shiny black, quite ugly. It is now twelve days old, and pin-feathers are beginning to become apparent. When I found that this creature had been hatched, I got in touch with the Australian Museum, and in a few days, when it is safe to do so, Dr. Keast is being sent out to observe the baby, so that the record of this breeding can be verified.

The position in which the bird has the nest, in dense foliage, precludes photographs from being taken for the time being. I would hate to disturb or frighten the mother and perhaps prevent the very nice extra feather in my avicultural cap.

* * *

BREEDING OF TIMNEH × AFRICAN GREY PARROTS

By K. W. DALTON (Hallow, Worcs, England)

An African Grey Parrot hen and a Timneh cock which I purchased in the spring of 1956 laid four eggs on the floor of the shelter. They sat for about four weeks, but the eggs were not fertile.

This year I stood a hollow log on the floor of the shelter and they soon went to nest, four eggs were laid and both birds stayed in the nest all the time except for feeding. About the 27th June young were first heard, three of the eggs hatched and for the first two weeks, due to the very hot weather, neither of the parents brooded in the day time, but both did at night. Two of the young had black beaks the other a white one. The next three weeks were very wet and both birds brooded night and day, the cock Timneh coming off now and again to get food which consisted of apple, hemp, and monkey nuts, and though sunflower seed was offered little was taken, but very large quantities of water were drunk. During the sixth week the young one with the white beak died. The following week the parents only brooded at night and the young started to get feathers on head and wings. Three weeks later, when the young were half-grown, another one died and I can only put this down to suffocation at night as both parents brooded at night. Food taken was as before but now more sunflower seed was eaten, the parents were still brooding at night and this continued until the surviving young one left the nest-box when 13 weeks old. It has a reddish brown tail like the Timneh cock.

BREEDING OF THE QUEEN OF BAVARIA'S CONURE

(*Aratinga guarouba*)

By DAVID M. WEST (Montebello, California, U.S.A.)

This year I have had young Bourke's, Elegants, Turquoisines, Barraband's, Pileated, Red-rumped, Crimson-wings, blue Ring-necks, Stanley, Rosellas, hybrid Brown's \times Yellow Rosella, and Queen of Bavaria's Conure. Princess, lutino Ring-necks, yellow Red-rumps did not breed.

The nesting of the Bavarias is the most amazing result for the pair are not perfect specimens. The male is a pinioned bird, and the female has a flight impediment, and though she flies it is with some difficulty. Accordingly it is all the more surprising that on 1st July I found the female on three eggs. As the pair go in and out of their nest and use it for a play-pen most of the time, I had not realized that they were nesting. She had not been noticed spending any special amount of time in the nest. It was my impression, on 1st July, that the three eggs were fresh. On 4th July it was 104 degrees in the garden, despite large, shady trees. Noting the female was off, and had been off almost continually during the day, I took a quick look-see. The initial impression was dismay, for broken egg-shells were in evidence. Then, as my eyes grew accustomed to the darkness in the interior of the box, two small bits of fluff and one egg could be seen. It had been my original impression that the broken egg-shells had indicated that they had used the eggs as toys, but what elation to find they had actually done the right thing and incubated them!

Despite an almost 100 per cent conviction on my part that the parents would refuse to feed, or murder the chicks, or the box would fall to the ground, or the weather would cook the chicks, the birds have continued to thrive. Since then the third egg has hatched, and the chick has grown apace, so that there is very little difference between the three in size.

The weather has been the greatest worry. The summer has been the hottest in several summers, and since 1st July there has not been a day with a temperature of less than 80 degrees, and several days with the temperature over the century mark. Still, the parents and chicks are doing well, so one should not worry, especially since it must be very warm in their native habitat.

Both parents apparently feed the young and have from the first. The male spends the night in the nest, which is about 18 inches by 18 inches by 3 feet high. The box is hung under a shelter. The young are quite noisy and, while the parents are feeding, their calls can quite easily be heard at a distance of 50 feet.

The female is the more aggressive bird, but does not appear to be so upset when an inspection of the box is made. As the box is at eye level, I do not have to touch the nest, but can look directly in and see the young. Inspections have been made each week, and on very hot days when the temperature has been in the 90's or 100's, an inspection is made daily for fear that one of the young might have died and the smell would cause the parents to quit the nest.

Food : The parents are surprisingly unimaginative. They are very fond of fresh corn on the cob, and will eat at least three large ears of this a day. Formerly they were very fond of orange and apple, but at present they do not eat much of them. Grapes are flung to the ground in disgust, and ditto pine nuts. The only seed they eat in quantity is sunflower and a little oats. Canary and millet are almost totally ignored. Greens are not much appreciated. It is obvious that the most important article in their diet while rearing young is the fresh corn. It is surprising to me how often they go to the water bowl to drink. Apparently they are a species that requires an inordinate amount of water while rearing young.

At the age of some thirty-five days the young were just beginning to show pin-feathers in the wing and tail. Now, at the age of six weeks they are almost fully covered with feathers, and quite large in size. Still, it would be my guess that they will be at least another three weeks in the nest. While they were without feathers their body colour reminded one of the body colour of young lutino or albino parrakeets—quite pinkish.

This is not a first breeding for the U.S., but must be the second recorded breeding. Previously in California the Sun Conure went under the name of "Golden" Conure, and for this reason several people have, erroneously, been given credit for breeding the Queen of Bavaria's Conure. Some gentleman in Louisiana has bred the Queen of Bavaria's Conure and has reared three, although I believe he helped the parents and hand-fed the youngsters from time to time, although this fact certainly should not detract from his accomplishment. It is my understanding that the adult pair and one of their youngsters have been purchased by Mr. Rudkin, Junr., and are in his collection at Fillmore.

I believe that the youngsters will emerge from the nest with their plumage streaked with green. Mr. H. Zelenko, of New York City, has told the writer that a Bavaria in his possession laid eggs while still in immature (streaked green) plumage. Does this indicate they mature early, for somewhere it seems to me I've read that mature plumage is assumed at the end of the first year? This has been the case with the young bird reared in Louisiana, for it was in full adult (clear yellow) plumage by the end of fifteen or sixteen months.

Post-script :

At the end of the tenth week the youngsters left the nest. The youngest of the three birds left the nest too early, and daily would end up on the ground. This necessitated my replacing him in the nest every evening, and the following day the process would be repeated. This discouraging situation finally resulted in the removal of this bird from the aviary, and hand-feeding "him". I believe this bird to be a male, as it is very brightly coloured.

The remaining two youngsters were replaced each night in the nest-box for the first week after they came out. After the first week, however, they have been able to find their way back to the nest each night by themselves, and at the present time the parents and the two youngsters all sleep in the box together and without any fighting.

The young began to eat by themselves about the third day after leaving the nest. The parents take very good care of them, and constantly hover about the youngsters, even at this late date. (23rd October, 1957.) The youngsters are quite reluctant fliers, and prefer to crawl about rather than fly, though when forced into it they fly very well.

The parents are now back again mating regularly, and appear somewhat interested in the nest-box. However, the colder weather is coming upon us, and I doubt that their present interest will be long-lived.

It should be added that the two youngsters living with their parents have the same terrible galaxy of cries and yells that their parents have. The four birds greet each new dawn with a full assortment of terrible shrieks and cries . . . about the only drawback to this wonderfully coloured bird.

LONDON ZOO NOTES

By J. J. YEALLAND

The fourth of the B.B.C. Television Service's "Zoo Quest" expeditions set out in June, this time for the Central Highlands of New Guinea where David Attenborough and Charles Lagus stayed at Nondugl as guests of Sir Edward Hallstrom, filming the animal life of the Wahgi and Jimi Valleys and later visiting the Bismarck Mountains. Sir Edward's fauna station at Nondugl is, as members know, in the care of Mr. F. Shaw Mayer, who, it will be remembered, brought a number of rare and beautiful Papuan birds to London before the war. The collection brought to the Zoo by David Attenborough in October called to mind those far-off days, for it contained thirteen Birds of Paradise, the largest number to be exhibited here since about 1940. These came from the large aviaries at Nondugl as present from Sir Edward, the complete list (those new to the Collection marked with an asterisk) of his gift being: —

*₁ Sickle-billed Bird of Paradise (*Epimachus meyeri bloodi*); *₂ Princess Stephanie's (*Astrapia stephaniae ducalis*); *₁ Salvadori's (*Paradisaea apoda salvadorii*); *₁ Finsch's (*P. minor finschi*); *₂ Blue or Prince Rudolph's (*P. rudolphi margaritae*); *₁ King (*Cicinnurus regius similis*); *₂ Golden-winged Magnificent (*Diphyllodes magnificus hrysopterus*); *₁ Hallstrom's (*Pteridophora alberti hallstromi*); *₁ Black and Gold (*Cnemophilus macgregori sanguineus*); 1 Lesser Superb (*Lophorhina superba minor*); *₁ Stone's Cat-Bird (*Ailuroedus buccoides tonii*); *₂ Yellow-breasted Bower-Birds (*Chlamydera lauterbachii*); *₄ Blue-faced Lorikeets (*Trichoglossus haematod intermedius*); 1 Red-bellied Eclectus Parrot (*Lorius roratus pectoralis*).

Those collected by Attenborough and Lagus, and presented by the B.B.C. Television Service:—

*₂ Fig Parrots (*Opopsitta diophthalma coccineifrons*); *₁ Plicated Hornbill (*Rhyticeros plicatus jungei*).

It will be noticed that the common names used for some of these birds are adaptations of the specific or sub-specific name, as the case may be. The reason for this is that these particular races appear to have no separate common name.

Some of the Birds of Paradise are still in the immature plumage. The Superb is the one described by Iredale as *L. superba addenda*; I am not sure if this is an accepted name, but if so, the sub-specific name *minor* given above can be corrected later.

A great deal should be written about this magnificent collection, and it is hoped, if all goes well, to publish more detailed notes with photographs, though, as we all know, only coloured plates can do justice to Birds of Paradise.

Since the birds were not permitted to enter Australia, David

Attenborough had to take the collection (which, of course, also included some mammals and reptiles) to Rabaul, by sea to Hong Kong where he stayed with Dr. Searle, and thence by air to London. On the same plane came a pair of Chinese Starlings presented by Dr. Searle and a Javan Brahminy Kite and a Siberian Ground Thrush given by Mr. G. H. Newmark.

A Tengmalm's Owl that flew on board one of the ships taking part in the N.A.T.O. exercises off the Lofoten Islands has been presented; also a Duck Hawk or North American Peregrine (*Falco peregrinus anatum*) which flew on to a grain ship off Baffin Island. The Duck Hawk is the first to be received here. A Red-fronted Woodpecker was sent as a present from Mrs. D. Seggar, who has previously given various birds collected in British Guiana, and a Bronzy Sunbird has been received in exchange.

Cormorants that nested on the imitation cliff in the Southern Aviary and reared two young earlier in the year have now re-made their nests in the trees, using the old materials.

Editor's Note.—With regard to the "common names" given to the Birds of Paradise in the above Notes, it is difficult to understand why it is considered necessary to do this. It should be emphasized that these so-called "common names" applied to rare exotic species, which are most unlikely ever to become *common* birds, have no real significance. For many years the Zoological Society of London, as in the present instance, seems to have invented "common names" by translating the specific or sub-specific name into the nearest English equivalent. This practice has never been followed in horticulture where the internationally accepted Latin name is retained for all rare species, and there would seem to be no real reason for departing from this generally accepted procedure. In addition the translation of such "common names" into other languages is liable to lead to confusion which could never arise if the correct nomenclature had been maintained.

COUNCIL MEETING

A Council Meeting was held on 11th November, 1957, in the Council Room, Zoological Society of London.

* * *

OFFICERS FOR 1958

There were the following retirements and appointments :—

Council : Mr. Gerald Iles resigned on taking up residence in Canada, and Mr. Sydney Porter and Mr. R. C. J. Sawyer retired by rotation.

Dr. E. Hindle, Dr. F. B. Lake, and Mr. K. A. Norris were elected to fill the vacancies.

* * *

Mr. Allen Silver was elected a Vice-President of the Society.

Mr. W. J. C. Frost was elected an Hon. Life Member.

* * *

SOCIETY'S MEDAL

The Society's Medal was awarded to :—

Mr. E. J. Boosey, for breeding the Senegal Parrot (*Poicephalus senegalus*).

Mr. E. J. Boosey, for breeding the Greater Hill Mynah (*Eulabes religiosa*).

Mr. A. A. Prestwich, for breeding the Green Imperial Fruit Pigeon (*Ducula aenea*).

ARTHUR A. PRESTWICH,

Hon. Secretary.

EXCHANGE AND MART SCHEME

Members often have odd birds for which they are unable to obtain a mate. In order to facilitate the exchange of such birds the Council have decided to inaugurate this scheme.

Any member who wishes to take advantage of the scheme should send to Mr. C. M. Payne a postal order for 5s., and particulars of the bird required or for disposal. If Mr. Payne has a record of such a bird from another member he will advise both members, who will then be in a position to communicate with each other. It is not the intention that the Society should take any part in the negotiations.

The payment of 5s. will entitle the member to the benefits of the scheme until the 31st December, 1958.

Mr. Payne's address is : The Malt House, Barford, Warwickshire.

BRITISH AVICULTURISTS' CLUB

The fifty-ninth meeting of the Club was held at the Rembrand Hotel, Thurloe Place, South Kensington, S.W. 7, on Monday, 11th November, 1957, following a dinner at 7 p.m.

Chairman : Dr. E. Hindle.

Members of the Club : Miss P. Barclay-Smith, Miss J. Barnes, P. C. Bath, Hylton Blythe, A. W. Bolton, Miss K. Bonner, K. F. Clarke, Major C. N. Clayden, W. D. Cummings, Mrs. R. E. Darnton, Sir Godfrey Davis, M. F. Draper, B. H. Dulanty, Sqd.-Ldr. C. Everitt, Mrs. C. Everitt, Miss R. M. Ezra, Miss E. G. Ganner, J. C. Garratt, Dr. E. F. Gleadow, F. Grant, Miss M. Hagan, H. J. Harman, R. E. Heath, L. W. Hill, Miss S. I. Hobday, F. E. B. Johnson, Miss S. R. Joseph, Miss E. M. Knobel, Miss M. H. Knobel-Harman, Dr. F. B. Lake, A. J. Lambert, A. L. Leighton, P. H. Maxwell, F. Mosford, G. S. Mottershead, S. Murray, Sir Crawford McCullagh, Bart., K. A. Norris, W. R. Partridge, C. M. Payne, A. A. Prestwich, J. H. Reay, D. M. Reid-Henry, S. Sanderson, R. C. J. Sawyer, J. L. Sears, D. Seth-Smith, A. C. Soanes, T. Spence, E. O. Squire, N. R. Steel, P. Sutton, J. A. Swan, Mrs. J. A. Swan, J. Thorpe, E. N. T. Vane, Mrs. G. Wheatley, H. Wilmot, W. A. Wingate, J. J. Yealland, D. Young.

Members of the Club, 62 ; guests, 54 ; total, 116.

Mr. and Mrs. R. E. Darnton were unable to show " Birds, Beasts, and Butterflies of Equatorial Africa " as notified to members, because this film has not yet been completed. Instead, they showed " Tobago and nesting Flamingos in the Caribbean ".

Mrs. Darnton has provided the following summary :—

" We spent last winter in Trinidad, Tobago, and Bonaire, and our film opens with various scenes taken round the lovely coast of Tobago and of the even more lovely hills and valleys of the island itself. When we were there, these valleys and hillsides were aflame with the spectacular flowers of the *Erythrina*s grown for shading the cocoa, and from many of these trees hung the long, pendulous nests of the Crested Hang-nest (*Ostinops decumanus*) whose activities we filmed.

" We also found a Hairy Hermit Humming Bird (*Glaucis hirsuta insularum*) attaching her nest with cobwebs to the tip of a hanging palm frond—a difficult subject for the camera, as the nest was only lit for ten minutes or so in the early morning. Unfortunately this lack of good lighting formed a problem throughout Trinidad and Tobago, as many of the most beautiful birds of these islands, such as the Red-capped Manakins, the Mot-mots, the Jacamars, and the Trogans, are birds of the shadows, and so are impossible to photograph satisfactorily.

" However, when we went to Bonaire this problem did not arise,

or instead of dense, tropical vegetation and tall forests, we found comparatively desert-like conditions—only trees and plants resistant to a very low rainfall being able to survive. Here in this tiny island we were fortunate in finding a colony of the Rosy Flamingo (*Phoenicopterus ruber*) actually nesting. This was extremely lucky for normally they do not nest until May, and we were there in early March. In fact we found several thousands of young birds of various ages already running about in great, grey flocks, while some of the adults were still sitting on eggs. This species of flamingo is undoubtedly the most beautiful, and is said to be also the rarest. We were so entranced by their beauty that we used to get up at 5 a.m. every morning so as to be at their feeding grounds just after dawn. To live almost among these lovely birds as we did for a fortnight, we felt was indeed a privilege we shall never forget."

The Chairman said he had seen numerous films of flamingos, but never one to equal the present. Judging by the applause, this opinion was obviously shared by the large audience. These are really worthwhile films, and Mr. and Mrs. Darnton are to be heartily congratulated on the results of their recent visit to the West Indies.

* * *

The annual subscription (5s.) will be due very shortly. Will members please note that, with a view to saving the unnecessary expense of postages, receipts will not be sent unless specially requested. The next meeting of the Club is on Monday, **13th January, 1958.**

ARTHUR A. PRESTWICH,
Hon. Secretary.

* * *

NEWS AND VIEWS

Colonel H. B. Finch has bred a hybrid of hitherto unrecorded parentage, Nutmeg or Spice Finch \times Magpie Mannikin.

* * *

The Whooping Crane is very close to extinction: only twenty-three are known to remain in the wild, with three in captivity. Both in 1955 and 1956 the pair in the Audubon Park Zoo, New Orleans, laid eggs and hatched young, but they soon died. This year the pair has again hatched young—this time it is to be hoped with better success.

* * *

S. A. Croucher, Head Keeper, Parrot House, Zoological Gardens, Regent's Park, retired on 15th October, after forty years in the service of the Zoological Society of London. Many members are greatly

indebted to "Sid", as he is familiarly known, for help and advice during many years, and all will wish him well in his retirement. Croucher has been succeeded by Fred Shambrook.

* * *

Comte Léon Lippens reports a hitherto unrecorded cross, Ring Ouzel (*Turdus torquatus*) × Mistle Thrush (*T. viscivorus*). In an aviary at the bird reserve "Le Zwin", at Knokke-Le Zoute, Belgium, a Ring Ouzel paired with a Mistle Thrush. They had four eggs, two young were hatched, one of which thrives and is now over three months' old. It is described as looking rather like a very dark Mistle Thrush.

* * *

Dr. Sten Bergman writes from Sorong, Dutch New Guinea: "I have excavated earth mounds of the Megapodes, where they lay their eggs. I have succeeded in hatching two eggs in a cupboard heated by a lamp burning day and night. I have thus had an opportunity of observing the very interesting and curious hatching. The chick kicks itself out of the egg and is able to fly as soon as it is dry. At present I have two chicks nearly two weeks old."

* * *

A. Decoux, Aix-sur-Vienne, France, reports: "I think the present breeding season is the worst I ever saw. The young parakeets and finches died in the nests in May. The weather was wet and cold. We had very severe frosts in April and May.

I have successfully bred the following doves and pigeons: Wonga, Wonga, Common and Crested Bronze-winged, Peruvian, Talpacoti, Diamond, Peaceful, Senegal, Bleeding-heart, and several others. Cuban Finches, Green Cardinals, Red-crested Finches, a few Australian Grassfinches; many young died after leaving the nest on account of the cold and rainy summer."

* * *

K. A. Norris sends further news of his birds: "The young Blue Robins are almost through their first moult. There are five splendid young cocks, bringing the stock of this species up to $7\frac{1}{2}$ pairs! The young Red-winged Blackbirds are also doing very well and one young cock is already learning to display its scarlet shoulder tufts.

Zosterops had a magnificent little nest, entirely of plant fibres, but, unfortunately, the two eggs appear to be infertile. The swarms of fruit and other flies which we "created" in anticipation of the arrival of young Zosterops have greatly delighted the Tree Frogs, and their response might lead one to think that I have the B.B.C. Male Voice Choir in the birdroom."

* * *

On the last day of August, W. J. C. Frost arrived back in England by P. & O. cargo-liner *Shillong*—on the following, outward voyage, his ship sank after a collision in the Red Sea—with the results of his fifty-third collecting expedition.

Amongst the birds brought home were Greater and King Birds of Paradise ; Great Indian, Wreathed, Plicated, and Malayan Pied Hornbills ; White-fronted Bronze-winged, Nicobar, Partridge, and Bleeding-heart Pigeons ; Bronze-tailed Peacock and Bornean Crested Fireback Pheasants ; Blue-tailed and Blue-winged Pittas ; Fairy Bluebirds ; Rothschild's and Black-necked Grackles ; Fire-tufted Barbets ; Rose Finches ; Mitchell's Lorikeets, etc. Wilfred Frost, now aged 82, left in the middle of November on yet another expedition to Borneo.

* * *

Breeding reports : Dr. S. B. Kendall, Citron-crested Cockatoos reared two exceedingly good young ; Greater Sulphur-crested Ibis incubated a single egg for about 28 days, after which it disappeared. Valther Langberg, Copenhagen, 2 Grey Parrots, 11 Splendids, and 1 lutino Nyasa Lovebirds. H. Murray, 2 Barraband's Parrakeets, male and female, bred from recently imported birds ; 19 Cockatiels, 1 Bourke's, 1 Guiana Parrotlet, 6 Green Cardinals, and a number of Nyasa Lovebirds. W. H. Rose, Blue-fronted Amazon, 1 young one just over three weeks old ; Yellow-backed Lories hatched 1 young one which lived about seven days ; they failed to hatch the single egg in their second nest. Dr. K. G. Rothwell, 4 Elegants, 7 Bourke's, 1 Golden-Mantled Rosellas, 4 Stanleys, Diamond Doves, and Chinese Painted Quail.

* * *

Leo A. Ara, Calcutta, records the following breedings : " Indian Ring-necked Parrakeets, March, 1954, one ; April, 1957, one. From second pair, the male being a yellowish bird (not a lutino) and the female normal, April, 1957, two—both green in colour. The yellowish male's colour does not remain constant as it has in turn been yellow, male green, and yellow-green. Quaker Parrakeets, July, 1955, two ; October, 1955, one ; August, 1956, two ; January, 1957, one. I now have a dozen. Golden-headed Conures, November, 1956, three ; February, 1957, three. At present they have young in the nest. I do not know how many but I have seen a young one, not fully feathered, at the entrance to the nest. They are really lovely birds and all live together in the same aviary."

* * *

C. af Enehjelm, Director, Helsingfors Zoo, writes : " I have not had a very successful breeding season, mainly due to a long absence. I have, however, bred 5 Three-coloured Parrot Finches, 20 Long-tailed Grassfinches, 7 Bichen's Finches, and some others. I have bred

6 Green-rumped Parrotlets. These are the first for some time—I have so many I have not allowed them to breed for the past two or three years.

Last year's disappointment with the Red-headed Buntings (*Icterica*) was repeated. Three young ones were hatched but they were fed for only a couple of days. The Indian Zosterops commenced incubating three eggs, but these disappeared. The same thing happened with four nests of Peters' Spotted Waxbills. Amongst my new arrivals are three pairs of Dufresne's Waxbills from Keston, also pairs of Melba and Crimson Finches. I now have two yellow and one "white" Masked Lovebirds—the last is very ugly."

* * *

When the Society was founded in 1894 the annual subscription was fixed at 5s. Four years later, in 1898, it was raised to 7s. 6d., and in 1900 to 10s. And so it remained until 1918 when it was increased to £1. It has now stood at this figure for 40 years!

The Avicultural Society is the only society of similar standing that has not increased its subscription during the recent, semi-inflationary years. But if the very high standard of the Magazine is to be maintained without an increase in the annual subscription the Society's income must be increased. This may best be done by the members themselves. They must make every possible effort to propose new members. No amount of energy on the part of the Officers can make up for apathy in this respect. And please remember that donations to the Coloured Plate Fund are always very welcome!

A. A. P.

* * *

REVIEWS

ORNAMENTAL WATERFOWL. By Lieut.-Col. A. A. JOHNSON and W. H. PAYN. H. F. and G. Witherby, Ltd., London, 1957. Price 21s. net.

Though wildfowl are very popular and a large number of books have been published, especially in recent years, on this group of birds there have been comparatively few on keeping them in captivity. Rose Hubbard was the first to produce such a book, entitled *Ornamental Waterfowl*, which was published in 1888, with a second edition in 1907. After an interval of a quarter of a century A. F. Moody's book on *Waterfowl and Game Birds in Captivity* appeared in 1932, and this was followed in 1933 by J. C. Laidley's comprehensive work on *The Care and Propagation of Ornamental Waterfowl*. Unfortunately all these books have been out of print for some time and are most difficult to obtain so that those who wish to start a collection of waterfowl have been at a great disadvantage. The appearance of the book under review is therefore particularly welcome and the authors have dealt with their

subject in a straightforward and simple manner which will be of particular use to those wishing to make a beginning in this fascinating branch of aviculture. The first chapter is on starting a collection and contains a list of some of the more attractive and less expensive ducks which are particularly suitable for beginners. The second deals with fencing, planting, and pond construction, and the book continues with chapters on general management of the collection, nests and eggs, hatching and rearing, plumage and moults, and ailments and diseases. Then follow descriptions of some native and exotic ducks and the geese and swans.

The necessity of making sure, by actual observation, that the ducklings are eating is pointed out, but the authors do not give information, as does Mr. Laidley, on methods of ensuring that the young birds do take food.

Emphasis is laid on the importance of winning the complete confidence of ducks and geese from the start and the great value of always talking to the birds when feeding or walking among them. That the authors carry out what they preach is shown by the instance quoted of a wild White-fronted Goose belonging to one of them which ate bread from the hand within six weeks of being captured, and which now likes to travel about sitting in the front seat of a motor-car.

The fact that each time there has been a special Waterfowl number of the Magazine the issue has sold out is evidence of the great interest there is in this group of birds and this latest book should therefore be in great demand. As the authors state: "There is, in fact, no reason at all that anyone who is interested in waterfowl should not keep at least a pair or two even if they have only the smallest of gardens or nothing more than a backyard."

P. B-S.

* * *

ARCTIC BIRDS OF CANADA. By L. L. SNYDER. University Press, Toronto ; Oxford University Press, London, 1957. Price 38s. net.

Though as the author, who is Curator of the Department of Ornithology in the Royal Ontario Museum, Toronto, states in the introduction, the scope of this book is approximately indicated by its title, it has been necessary to establish a rather precise boundary along the southern perimeter to serve as a threshold in determining what forms to include or exclude. Accordingly the boundary has been established as a line running along the treeless coasts of Yukon Territory and Mackenzie District east to Bathurst inlet and thence south-eastward to Eskimo Point on Hudson Bay, across that Bay to Portland Promontory on the east coast ; thence eastward to Ungava Bay and along its treeless coast to Cape Chidley. All species known to occur, or which have occurred north of this line are included.

In describing the nature of Arctic birds the author points out that it is not correct to assume that they are exceptionally hardy. He states that among the more relentless factors enforcing adjustment among Arctic birds is time, especially for migrants, and there is an urgency in courtship, laying, incubation, and growth of young. He also points out that the Arctic is stern and insistent, discouraging the development of frills and non-essentials such as crests, wattles, spangles and complicated rituals, and Arctic birds are plain and unembellished.

In describing the nature of Arctic bird populations he states that the best established generality is that they are notoriously unstable as to numbers and much of the instability is attributable to weather. The Arctic has been virtually unavailable to birds of arboreal habit and nearly half belong to one Order the Charadriiformes.

Attention is drawn to the fact that the knowledge of Arctic birds is very meagre and a number of points requiring detailed study are outlined. A key to the Orders of Canadian Arctic birds is given followed by a section on habitat as an aid to identification. The main part of the book is devoted to accounts of seventy-two species of ten different Orders, which include status, habitat, and characteristics with map. Additional names have been selected from the literature to include those which may be in use locally in the North, and Eskimo names for particular regions are given. In many cases there are excellent pen and ink drawings by T. M. Shortt.

P. B-S.

* * *

BIRDS OF BRITAIN CALENDAR FOR 1958. Country Life, Ltd.
London. Price 6s.

This calendar with a photograph of a different species for each month of the year by Eric Hosking is well up to the high standard of its predecessors. A short description of each bird is also given.

P. B-S.

* * *

NOTES

BREEDING AND REARING SUCCESSES AT BARFORD, WARWICKSHIRE, 1957.

The following birds have been bred this year: Derbyans, 3 youngsters fully reared; Princess of Wales, 4 youngsters fully reared; Barrabands, 3 youngsters fully reared; Cockatiels, 7 youngsters fully reared; Peach-faced Lovebirds, 1 youngster fully reared; Elegant Parrakeets, 1 youngster fully reared. Fischer's Lovebirds, a quantity, not less than 25 fully reared; so-called yellow Masked Lovebirds, 2 youngsters fully reared; split-lutino Indian Ring-necked cock paired to a normal hen—had 2 youngsters, both green; Chinese Painted Quail, 2 youngsters fully reared.

In addition to these I have reared a number of Pheasants and Peafowl. Rock Peblers had 4 youngsters which were lost after they left the nest; Yellow-backed Lorries, Many-coloured Parrakeets, Leadbeater's Cockatoos, Splendid Parrakeets and Bourke's Parrakeets had eggs which proved infertile. Towhees, 3 youngsters which they subsequently lost in the cold weather.

I think this may be the first time that yellow Masked Lovebirds have been bred in this country. There is perhaps some doubt as to whether they are in fact pure Masked Lovebirds. John Yealland, when he saw mine, expressed the view that they had Peach-faced Lovebird blood in them. However, contrary to the expressed opinions of more knowledgeable aviculturists, I still think that they are a delightful mutation, and I see no reason why in time by careful selection they should not be bred completely yellow with the very attractive bronze face. I have seen a considerable number of this mutation, and they vary in the intensity and clarity of the colour considerably. The pair which I have bred this year are very attractive. A newly-imported pair of Turquoisines are at the moment sitting on five eggs.

C. M. PAYNE.

NESTING OF PILEATED JAYS

My pair of Pileated Jays fortunately went to nest in mid-July, 1956, in a small aviary 12 feet by 4 feet, the shelter being 4 feet by 4 feet.

As they seemed to be playing around with nesting material and stripping the various growing plants and creepers in their aviary, I put an old Magpie nest in the shelter, never thinking that they would breed, but with the object of giving the plants a chance by diverting their attention. Great was my surprise two days after placing the nest to find an egg, not unlike that of our Magpie, in it. Two more eggs followed in the course of the next four days. The hen seemed to do all the sitting. In fact I never saw her off the nest, and the cock fed her. On the sixteenth day one youngster was hatched. When I looked about four days later the three eggs had hatched. Both birds appear model parents, but the cock did all the feeding. On collecting mealworms or maggots he would first feed the hen. She would then raise herself and the cock would feed one of the youngsters; he would repeat this until all were fed. Incidentally, I was not standing in the aviary shelter while this was taking place; their aviary was one of a range, and I could observe this from a small passage dividing their shelter from the next.

As at this time we were very busy on the land, I had not the time to collect beetles, grasshoppers, etc., of which they are very fond, so they had to make do on soft food and fruit, with mealworms and maggots as the only live food. I think perhaps this is the cause of the failure to rear them. On the seventh day I found one of the babies tucked away in a bush in the flight. A couple of days later the second one was placed in the same spot. The last one was still alive and apparently lusty on the sixteenth day, but as I could hear no feeding noises on the eighteenth, I flushed the hen. This, the last hope, was dead, although there was food in its crop. Never having seen a young Jay before, I couldn't really say, but my impression was that it was on the skinny side. The pair are nesting again now, so perhaps they will have better luck this time. They certainly deserve it, as both proved such good parents. As I have said before, the only conclusion I can come to is that perhaps the cause of failure was something lacking in their diet. However, we will see what happens this time.

P. G. PARIS.

BREEDING RESULTS AT SAN MARINO, 1957

Members may be interested to hear how some of my birds did this year. This season, after an unsuccessful attempt last year, I was able to rear one Black-chinned Tanager. Two young were hatched but one died. The survivor has been removed from the "glasshouse aviary" to avoid the possibility of its being killed by the parents. An interesting attempt was made by a Mountain Tanager male and a Red-eared Tanager female. They built a nest in a spruce tree but as far as I know no eggs were laid. As I am now out of the navy and will be back in Los Angeles next year I am planning to remove these two Tanagers and give them a planted aviary to themselves. A hybrid from them should be a truly magnificent bird. I also reared five young Grey-headed \times Brahminy Mynahs. I would like to state that the Grey-headed \times Pagoda Mynahs referred to in my article (page 47) were, in fact, the present cross. Brahminy Mynahs are often advertised as Pagoda Mynahs, hence the confusion, but they are not the same.

J. R. VAN OOSTEN.

CORRESPONDENCE

THE DRINKING HABITS OF *DUCULA* SPECIES

I have seen the Green drink in the wild state, and had both Pied and Green drink in captivity.

I have not seen them drink whilst standing on the ground with open feet. Like all the fruit pigeons they do not care for walking. The ones I had in captivity drank off perches, the water being placed within reach. Birds in aviaries had overhanging branches. They sidled down the branch until they could reach the water.

The common Bengal Green I have seen settling in huge numbers on the lower branches of a peepul tree (*Ficus religiosa*) until the branch touched water. Other fruit pigeons more normally settle on dead branches sticking out of the water. The Green Imperial are, of course, tree-top dwellers and very rarely come down to the ground. I should think they would get plenty of water, high up, which had been caught in broken branches. If my memory does not fail me these pigeons drank at dawn and dusk. I succeeded in breeding the Green while in Calcutta.

Stuart Baker mentions that some natives believe the Green Pigeon only comes down to drink where no perches are available, if it has a branch clasped in its feet. I have been told this by villagers in Bengal.

HERBERT FOOKS.

GRIZEDALE LODGE,
HAWKSHEAD, NR. AMBLESIDE,
WESTMORLAND.

BREEDING OF CRIMSON FINCHES (*NEOCHMIA PHAËTON*)

This summer we were fortunate in breeding three young Crimson (Blood) Finches (*Neochmia phaëton*). The parents nested in a covered flight, producing five eggs, the first about the 19th July. The young were hatched on 5th August, and three left the nest on the 25th and 26th August. A fourth was found dead at a very early age, and one egg was broken. We separated the young from their parents on the 12th September, as the first egg of a second round was laid on that day, and the young were being prevented from returning to the nest, which was usual until then. The three young are very fit indeed at time of writing (25th September), are medium brown in colour, slight crimson diffusion over back and wings, crimson tail, underside brown, flight-feathers dark brown, belly and thighs light brown, beak black.

The birds were very insectivorous, being fed gentles, once or twice ant eggs, and some mealworms, with plenty of chickweed and home-made sponge cake. Ideal parents, with the cock doing most of the incubation and much of the feeding.

L. SCAMELL.

WOODBURY COTTAGE,
BROAD LANE,
NEWDIGATE, SURREY.

A DIRECTORY OF BIRD RINGING

A world-wide directory of bird ringing is proposed to be published by *The Ring*, an international ornithological bulletin devoted entirely to bird ringing and bird migration studies. The avicultural rings will be included in this directory besides the rings of ornithological schemes, carrier pigeon associations, etc.

I should be most grateful if readers of the AVICULTURAL MAGAZINE could assist us by sending information and addresses—home and abroad—of all possible, even the smallest institutions, organizations, clubs, businesses, and individuals issuing their own rings for cage-birds. Samples of rings are essential, and would be greatly appreciated.

All communications and information should be sent to *The Ring*, 1 Altyre Road, Croydon, Surrey, England.

Dr. W. RYDZEWSKI, *Editor*.

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- 1948 BELLARS, C. G. ; 55 Riley Road, Overport, Durban, South Africa.
- 1952 BENEDICT, B. ; 350 E. 52nd Street, New York 22, N.Y., U.S.A.
- 1954 BENVIE, D. M. ; Heughhead, Friockheim, By Arbroath, Angus, Scotland.
- 1906**BERESFORD-WEBB, G. M. ; Norbryght, South Godstone, Surrey.
- 1955 BERGMAN, Dr. S., D.Sc. ; Rönninge per Stockholm, Sweden.
- 1954 BERKOUWER, A. ; Eendenkooi, Bakkerswaal, Lekkerkerk, Holland.
- 1956 BERROW, D. ; 49 Englested Close, Handsworth Wood, Birmingham 20.
- 1955 BERRY, N. A. ; Parattah, Tasmania, Australia.
- 1921 BEST, C. ; Bank House, Kirkgate, Newark, Notts.
- 1956 BEST, C. A. ; 131 Woodham Lane, New Haw, Weybridge, Surrey.
- 1949 BEST, R. E., F.Z.S. ; Montclare, Furze Hill Road, Torquay.
- 1952 BETTISON, L. J. ; R. R. No. 2, Oliver, B.C., Canada.
- 1953 BEULCKE, M. ; 54 Jan Breijdelaan, Kortrijk, Belgium.
- 1955 BEVINGTON, Mrs. D. ; Gallowbrook, St. Neots, Hunts.
- 1956 BEYER, CHARLES E., Jr. ; 4945 Morella Avenue, North Hollywood, Calif., U.S.A.
- 1939 *BHAVNAGAR, RAOL SHRI DHARMAKUMARSINHJI OF, F.Z.S., M.B.O.U. ; Dil Bahar, Bhavnagar, Saurashtra, India.
- 1951 BHAVNAGAR, YUVARAJ SHRI VIRBHADRASINGHI OF ; Nilambag Palace, Bhavnagar, Saurashtra, India.
- 1952 BIALLOSTERSKI, W. ; Kruidbergerweg 99, Santpoort, Holland.
- 1945 BIRCH, P. A., F.Z.S. ; "Avian Vale," Dodford, Nr. Bromsgrove, Worcs.
- 1954 BIRCHALL, Mrs. E. J. ; "Sundown," Storrs Park, Bowness-on-Windermere, Westmorland.

- 1956 BIRD, ROBERT ; 60 McKenzie Street, Leichhardt, N.S.W., Australia.
 1952 BIRD, W., F.R.P.S., F.I.B.P. ; The Coach House, 54 Gwendolen Avenue, Putney, S.W.15.
 1948 BIRRELL, Mrs. J. DALZIEL ; Christmas Cottage, Brick Kiln Common, Wisborough Green, Sussex.
 1950 BIRTLES, ALBERT ; 169 Royds Street, Rochdale, Lancs.
 1952 BLAAUW, A. F. H., O.B.E. ; "de Wissel," Rysbergen (N.-B.), Holland.
 1956 BLACK, F. ; 95 Woodlands Road, Sparkhill, Birmingham 11.
 1937 BLAND, W. P., F.Z.S. ; 3 Station Approach, Meols, Hoylake, Cheshire.
 1956 BLATCHLEY, M. A. ; 108 Linden Avenue, Ithaca, New York, U.S.A.
 1956 BLOOD, Dr. BENJAMIN D. ; Casilla 99, Azul, Buenos Aires, Argentina.
 1951 BLOOM, R. ; The North of England Zoological Society, Chester.
 1956 BLUM, A. J. ; P.O. Box 114, Mt. Healthy, Cincinnati 31, Ohio, U.S.A.
 1946 BLYTHE, Hylton, F.Z.S. ; "Bay View," 7 Clieveden Road, Thorpe Bay, Essex.
 1956 BOLTON, A. W., F.Z.S. ; St. Frederick, King's Road, Chalfont St. Giles, Bucks.
 1956 BOND, F. ; Mountway Road, Bishops Hull, Taunton, Somerset.
 1949 *BONNER, Miss Kay ; 61 Chase Road, Oakwood, N. 14.
 1940 BONNY, J. W. ; Springfield, 166 Whitegate Drive, Blackpool, Lancs.
 1956 BOOTH, W. ; "Regat House," Lower Leigh Road, Daisy Hill, Westhoughton, Bolton, Lancs.
 1951 BOURNE, Mrs. V. M. ; 78 Idmiston Road, West Norwood, S.E. 27.
 1956 BOUTS, WILLY H. ; Biesterweg 84, Eindhoven, Holland.
 1951 BRADLEY, R. H. ; 13 Waubesa Street, Madison, Wisconsin, U.S.A.
 1950 BRAIN, William, F.Z.S. ; Haynes, 30 Rushworth Road, Reigate, Surrey.
 1956 BRAITHWAITE, J. ; Garlands Hospital, Carlisle, Cumberland.
 1951 BRATLEY, G. W. ; 39 Westfield Avenue, Pontefract, Yorks.
 1956 BREARLEY, A. R. ; 30 Cambridge Street, St. Neots, Hunts.
 1956 BRIANT, J. H. ; 317 Stone Road, Stafford.
 1953 BRIDEAUX, H. G. ; Haigh-Moor, La Rocque, Jersey, C.I.
 1956 BRIGGS, A. E. ; 32 Thomas Street South, Hopwood Lane, Halifax, Yorks.
 1953 BROADBENT, W. ; 13 Pine Grove, Southport, Lancs.
 1949 BROCK, DONALD S. ; 5840 Seminary Court, Oakland 5, California, U.S.A.
 1956 BROCKBANK, R. ; 14 Lansdowne Street, Burnley, Lancs.
 1955 BROECKE, GEORGES VAN DEN ; Wakken, West Flanders, Belgium.
 1933 BROOKES, Miss F. C. ; Massam Hall, Old Leake, Boston, Lincs.
 1955 BROOKING, A. H. ; 31 Grovelands Road, Purley, Surrey.
 1931 BROWN, E. J. ; 29 Dean Road, Bitterne, Southampton.
 1956 BROWN, FREDERICK H. ; 31 Roebuck Street, Mile End, South Australia.
 1956 BROWN, J. HATCHELL ; "The Willows," Roadside Delivery, Broadford, Victoria, Australia.
 1956 BROWN, L. M. ; Silver Street, Coningsby, Lincoln.
 1946 BROWN, RALPH ; The Pleasants, Aberdour, Fife, Scotland.
 1950 BROWN, Dr. REGINALD E. B. ; 6 Barker Street, Newcastle, N.S.W., Australia.
 1924 BROWN, W. FERRIER ; 85 Yew Tree Road, Southborough, Kent.
 1952 BROWN, W. G. ; Strathclyde, 8 Carrick Drive, North Mount Vernon, Glasgow, E. 2.
 1947 BRUYNEEL, J. ; Domaine de Steenokkerzeel, Régie, Belgium.
 1942 *BRYCE, Mrs. PETER COOPER ; Florestal, Hope Ranch, Santa Barbara, Calif., U.S.A.
 1928 BUCHANAN, A. ; 33 Townhill Road, Dunfermline, Fife.

- 1956 BUCKINGHAM, D. C. ; "Rest Harrow," Shenley, Herts.
 1938 BUCKINGHAM JONES, C., LL.M. ; Dibrugarh, Assam, India.
 1925 BUCKSEY, Mrs. D. E. ; Bellevue, Green Lane, Hambledon, Portsmouth, Hants.
 1956 BULFORD, STAVELEY ; Manor House, East End Lane, Ditchling, Hassocks, Sussex.
 1953 BUNTON, Dr. P. H. ; "Elim," P.O. Addo, Cape Province, South Africa.
 1956 BUONACCORSO, N. U. ; 25 Viale Machiavelli, Rosselli Del Turco, Firenze, Italy.
 1953 BURBRIDGE, J. H. ; Ambleside Water Gardens and Aviaries, Lower Weare, Axbridge, Somerset.
 1956 BURNET, COLIN A. ; "Murrunjai," Merriwa 3N., N.S.W., Australia.
 1956 BURT, F. J., F.Z.S. ; "The Hollies," 78 Tollers Lane, Old Coulsdon, Surrey.
 1952 BURTON, M., D.Sc., F.L.S., F.Z.S. ; British Museum (Natural History), Cromwell Road, London, S.W. 7.
 1953 BURY, The Viscountess, J.P. ; Mount Stewart, Newtownards, Co. Down, N. Ireland.
 1942 BUXTON, J. LEAVESLEY, F.Z.S. ; Brightlea, 227 Streetsbrook Road, Solihull, Birmingham.
 1956 BYE, G. G. ; 29 Lurgan Walk, Knowle, Bristol 4.
 1948 BYRNE, J. ; 13 Hartfield Crescent, Wimbledon, S.W. 19.
- 1953 *CAFFERTY, Miss D. I. ; 662 Wellington Avenue, Chicago 14, Ill., U.S.A.
 1954 CAMERON, Mrs. J. WALTER ; Paia, Maui, Territory of Hawaii.
 1933 CAMPEY, A. D., B.E.M. ; "Northlands," Hull Bridge Road, Beverley, E. Yorks.
 1934 CAPRON, C. N. ; 1020 South L. Street, Lake Worth, Florida, U.S.A.
 1956 CAREY, R. J. P. ; Dominion Museum, Wellington, New Zealand.
 1954 CARLSSON, T. ; Skolgatan 9, Malmberget, Sweden.
 1956 CARPENTER, Mrs. B. ; 2820 College Avenue, Berkeley 5, Calif., U.S.A.
 1955 CARPENTIER, J. ; Diepestraat 59, Antwerp, Belgium.
 1918 CARR, PERCY ; Ormond Lodge, Newbold-on-Stour, Nr. Stratford-on-Avon.
 1952 CARR, W. H. ; Murray Lodge, Newmarket, Suffolk.
 1952 CARTHEW, W. R. ; P.O. Box 49, Vereeniging, South Africa.
 1950 CARTWRIGHT, K. G. ; "The Gables," 10 Brick-Kiln Street, Quarry Bank, Nr. Brierley Hill, S. Staffs.
 1954 CASTAN, Dr. R. ; 16 Brd. Président Fallières, Gabès, Tunisie.
 1953 CASTLE, D. F. ; "Clive Cottage," Stockens Green, Knebworth, Herts.
 1956 CATERER, A. D. ; 5 Lutterworth Road, Wyken, Coventry.
 1954 CHADWICK, J., F.Z.S. ; Sewerby, Bridlington, E. Yorks.
 1956 CHAMBERLAIN, Miss C. PEARL ; Gt. Broadhurst Farm, Heathfield, Sussex.
 1956 CHANNING, Mrs. Y., F.Z.S. ; 14 Sycamore House, Maitland Park Villas, Hampstead, N.W. 3.
 1932 *CHAPLIN, The Right Hon. the Viscount, F.L.S., F.Z.S., M.B.O.U. ; Wadstray House, Blackawton, Nr. Totnes, Devon.
 1951 CHEESMAN, M. R. ; 4888 South 13th East Street, Salt Lake City 7, Utah, U.S.A.
 1930 CHICHESTER, Mrs. H. G. ; Galgorm Castle, Ballymena, Co. Antrim, N. Ireland.
 1956 CHILSTON, Viscount ; Chilston Park, Sandway, Nr. Maidstone, Kent.
 1956 CHILVERS, W. ; Walmsley House, Hambleton, Selby, Yorks.

- 1914 CHRISTIE, Mrs. G. ; Kellas, By Elgin, Morayshire.
- 1945 CLARENCE, Capt. A. A. ; 25 Elms Avenue, Parkstone, Dorset.
- 1949 CLARK, G. T., "Maidsmere," Finstall, Bromsgrove, Worcs.
- 1942 CLARK, Mrs. G. T., F.Z.S. ; "Maidsmere," Finstall, Bromsgrove, Worcs.
- 1956 CLARK, R. S. ; 64 Skene Street, Shepparton, Victoria, Australia.
- 1956 CLARKE, K. D. ; 2 Barker Avenue, Tuart Hill, Western Australia.
- 1953 CLAYDEN, Major C. N. ; The Middlesex Regt., Inglis Barracks, Mill Hill, N.W. 7.
- 1952 CLAYTON, S. ; Heathfield, St. Philip's Road, Newmarket, Suffolk.
- 1950 CLAYTON, T. L. ; 75 Park Road, Hampton Hill, Middx.
- 1956 CLEAR, Prof. VAL ; Anderson College, Anderson, Indiana, U.S.A.
- 1938 CLEMENTS, O. E., L.D.S., R.C.S.(Eng.) ; 1 Bayswater Road, Highlands, Salisbury, Southern Rhodesia.
- 1949 CLEMITSON, J. W. ; 25 St. Paul's Gardens, Whitley Bay, Northumberland.
- 1956 COLLINS, D. ; Bella Farm, Wharram, Malton, Yorks.
- 1956 COLLINS, Mrs. G. ; 9 Glen Almond Street, New Plymouth, New Zealand.
- 1955 COLQUHOUN, J. M. ; Ardmore, Papakura, R.D., New Zealand.
- 1954 CONWAY, W. G. ; St. Louis Zoological Park, St. Louis 10, Mo., U.S.A.
- 1956 COOK, H. M. ; 62 Evans Street, Belmont, N.S.W., Australia.
- 1950 COOMBS, E. W., F.Z.S. ; "The Woodlands," Walderslade Road, Nr. Chatham, Kent.
- 1926 COOPER, Mrs. C. M. ; "Villa D'Este," Burges Road, Thorpe Bay, Essex.
- 1953 COOPER, Mrs. F. D. ; Dunstan Lodge, Churchdown, Gloucester.
- 1952 COOPER, J. T. ; Hall Farm, Outwell, Nr. Wisbech, Cambs.
- 1951 CORBETT, R. C. U. ; Itchen Abbas Cottage, nr. Winchester, Hants.
- 1956 CORBRIDGE, J. ; 47 Kenyon Lane, Moston, Manchester 10.
- 1953 CORLETT, JEROME ; Rt. 1—Box 878, Mobile, Alabama, U.S.A.
- 1942 CORWIN, SAUL C. ; 165 Broadway, New York 6, New York, U.S.A.
- 1955 COSTA, Dr. C. FERNANDO ; Rua Dr. Antonio Martins No/11, Estoril, Portugal.
- 1956 COTT, TURLOUGH ; "The Shrubbery," Kilcock, Co. Kildare, Ireland.
- 1956 COUTTS, Miss JOY ; 102 Young Street, Ayr, Queensland, Australia.
- 1956 COWAN, JOHN C. ; 41 Birdwood Circus, Bicton, Western Australia.
- 1950 COWARD, D. M., F.Z.S. ; "Karibu," Longfellow Avenue, Wellsway, Bath.
- 1925 COWLEY, H. ; The Manor House, Bubbenhall, Nr. Coventry.
- 1947 COWLISHAW, A. G. ; The Chalet, 35 Aylesbury Street, Bletchley, Bucks.
- 1933 COX, Mrs. B., F.Z.S. ; Barncrosh, Castle Douglas, Scotland.
- 1956 COX, D. W. ; 32 Beamsley Road, Frizinghall, Shipley, Yorks.
- 1952 COYNE, Major S. F. ; The Sherwood Foresters, Normanton Barracks, Derby.
- 1956 CREED, C. W. G. ; Dalhousie, 47 Gordon Avenue, Highams Park, E. 4.
- 1956 CROCKFORD, W. A. ; 67 Davenport Avenue, Hessle, E. Yorks.
- 1929 CROFTS, ROBERT T. ; 85 Reeves Avenue, Cross Heath, Newcastle, Staffs.
- 1949 CRONE, G. H. ; Jan Luykenstraat 16, Amsterdam, Holland.
- 1956 CROWE, R. W. ; Grey Tree, South Nutfield, Surrey.
- 1956 CULLEN, KELVIN J. ; 227 Wilson Street, Broken Hill, N.S.W., Australia.
- 1948 CUMMINGS, W. D., F.Z.S. ; The Keston Foreign Bird Farm, Ltd., Brambletye, Keston, Kent.
- 1952 CUNNINGHAM, A. M., F.Z.S. ; 21 Kitchener Road, East Finchley, N. 2.

- 1956 CURETON, J. ; Route 3, Cedar Lane Road, Greenville, South Carolina, U.S.A.
- 1955 CURLEWIS, Dr. B. WARREN ; 86 Crescent Road, Newport, N.S.W., Australia.
- 1956 CURTIS, LAWRENCE ; Fort Worth Zoo and Aquarium, Fort Worth, Texas, U.S.A.
- 1939 DABNER, P. L. ; 56 Arkwright Road, Sanderstead, Surrey.
- 1951 D'AETH, A. H., F.Z.S. ; 45 Ormonde Terrace, Regent's Park, N.W. 8.
- 1946 DALBORG-JOHANSEN, J. ; Dyrhaage, Graabrødreplads 6, Odense, Denmark.
- 1949 DALGETY, C. T., F.Z.S., M.B.O.U. ; Broomy Lodge, Linwood, Ringwood, Hants.
- 1937 DALLOW, F., M.B.E. ; 13 Hillingdon Road, Stretford, Manchester.
- 1954 DANECOURT, W. A. ; Hartley, Dartford, Kent.
- 1948 DANHIER, M. F. ; 186 Chaussée de Charleroi, Brussels, Belgium.
- 1950 DARMAN, H. J., F.Z.S., F.R.H.S. ; 44 Fraser Road, Walthamstow, London, E. 17.
- 1932 DARNTON, Mrs. I., M.B.O.U. ; Sissinghurst Court, Cranbrook, Kent.
- 1956 DARNTON, R. E. ; Sissinghurst Court, Cranbrook, Kent.
- 1956 DAUNCEY, A. N. ; 123 Ridgeway, Edgbaston, Birmingham 17.
- 1956 DAVENPORT, ANDREW B. ; 34 Molden Street, E. Ormond, Victoria, Australia.
- 1956 DAVEY, H. ; 3 The Crescent, Lower Willingdon, Nr. Eastbourne, Sussex.
- 1956 DAVIES, D. H. ; 7 Exeter Way, Pinelands, Capetown, S. Africa.
- 1954 DAVIES, G. C. N. ; P.O. Box 1155, Lourenço Marques, Portuguese East Africa.
- 1955 DAVIS, E. F. ; Columbus Zoological Park, Columbus, Ohio, U.S.A.
- 1927 DAVIS, Sir GODFREY, I.C.S., F.Z.S. ; Beresfords, Boughton Monchelsea, Nr. Maidstone, Kent.
- 1941 DAVIS, H. H. ; Little Stoke, Patchway, Bristol.
- 1956 DAY, J. ; 7 Fitzilian Avenue, Oak Road, Harold Wood, Essex.
- 1950 DAY, J. N. E., M.Sc., Ph.D. ; 18 Homewood Road, St. Albans, Herts.
- 1952 DEACON, D. R. ; 41 Hilders Road, Western Park, Leicester.
- 1951 DEAN, A. W. S. ; Sudbrook Manor, Sudbrook, Grantham, Lincs.
- 1956 DEANE, R. S. W. ; c/o Utilities Dept., T.T.O.C. Pointe-à-Pierre, Trinidad, B.W. I.
- 1955 DEAN, W. ; 20 Manor Road, Bolenall, Tamworth, Staffs.
- 1952 DEANS, G., F.Z.S. ; 3 New Edinburgh Road, Dalkeith, Midlothian.
- 1953 D'EATH, J. O. ; The Grove, Hadley, Barnet, Herts.
- 1953 DE BEAUMONT, Mrs. G. ; Blairlogie House, Menstrie, Clackmannanshire, Scotland.
- 1954 DE CARVALHO MONTEIRO, A. ; Praça dos Restauradores 13-2° D., Lisbon, Portugal.
- 1917 DECOUX, A. ; Géry, Aix-sur-Vienne, Haute-Vienne, France.
- 1948 DE GOEDEREN, G. ; Orteliuskade 74, Amsterdam-W, Holland.
- 1955 DE KANTER, A. L. G. ; 22 Thwaite Street, Cottingham, E. Yorks.
- 1903** DENNIS, Mrs. H. E. ; Lower Nash, Nutbourne, Pulborough, Sussex.
- 1924 DENNY, Mrs. H., C.B.E., J.P., F.Z.S. ; The Chantry, Horsham, Sussex.
- 1930 DE PASS, GERALD V., F.Z.S. ; The Old Kennels, Satwell, Nr. Henley-on-Thames.
- 1932 DE PLEDGE, Miss BERYL ISABEL, F.Z.S. ; 9 Beaufort House, Beaufort Street, Chelsea, S.W. 3.
- 1956 DE ROECK, A. ; 58 Avenue Arthur Goemaere, Antwerp, Belgium.

- 1948 DESAI, PRADYUMAN K. ; Takhteshwar Plot, Bhavnagar, Saurashtra, India.
 1956 DEWHURST, Miss S. ; Dungarthill, Dunkeld, Perthshire, Scotland.
 1945 DEXTER, J. E., M.M. ; Mansdale, Calvert Road, Dorking, Surrey.
 1951 DIEDRICH, W. W. ; Dierenpark Wassenaar, Rijkstraatweg 667, Wassenaar, Holland.
 1955 DIERCXSENS, LOUIS ; Président, Société Royale de Zoologie d'Anvers, 26 Place Reine Astrid, Antwerp, Belgium.
 1954 DIGBY, J. M. T. ; 50 Cressingham Road, Burnt Oak Estate, Edgware, Middx.
 1956 DIGBY, R. D. ; 47 Westview Drive, Woodford Green, Essex.
 1955 DIGGLE, A. ; 10 Cross Hill Street, Highcrompton, Shaw, Nr. Oldham, Lancs.
 1955 DILGER, Professor W. C. ; Laboratory of Ornithology, Cornell University, Ithaca, New York, U.S.A.
 1955 DI SABATO, L. R. ; 2362 Joyce Avenue, Columbus, Ohio, U.S.A.
 1953 DOLTON, K. W. ; Sundown, Oakleigh Avenue, Hallow, Worcester.
 1954 DOMINGUEZ, Dr. R. H. ; Box 248, Utuado, Puerto Rico.
 1956 DOMINY, G. A. ; Beechcroft, Curdridge, Southampton.
 1924 *DOOLY, THOMAS L. S. ; Whimbrel, Kirklake Road, Formby, Nr. Liverpool.
 1955 DÖPFER, Frau ERIKA ; Hercules Strasse 8, Kassel, Germany.
 1953 DOSSCHE, ARM. ; Toekomststr. 38, St. Amandsberg-Ghent, Belgium.
 1955 DOUETIL, B. N. ; "Chalfont," Wayneffete Tower Ave., Esher, Surrey.
 1956 DRAPER, C. R. ; 802 Church Lane, Yeadon, Pa., U.S.A.
 1956 DRAPER, M. F. ; "Wessex," Dummer, Basingstoke, Hampshire.
 1956 DRESSLER, J. ; 40 Brent Road, Plumstead, S.E. 18.
 1947 DRING, W. T., F.Z.S. ; 12 East Park Street, Chatteris, Cambs.
 1953 DRING, Mrs. W. T., F.Z.S. ; 12 East Park Street, Chatteris, Cambs.
 1955 DRIVER, H. L. ; 64 Laburnam Road, Biggleswade, Beds.
 1947 DUFOUR, Colonel JOHN ; 167 Avenue de Belgique, Antwerp, Belgium.
 1954 DUFTY, J. H., J.P. ; Post Office, Aberdare, 3 N. via Cessnock, N.S.W. Australia.
 1939 DULANTY, BRIAN H., F.Z.S. ; Fisheries Cottage, Chorley Wood, Herts.
 1922 DUNMORE, Oscar E., F.Z.S. ; 31 Mickleton Drive, Evington, Leicester.
 1930 DUNSTER, Capt. J. E. ; Bucklebury Village, Nr Reading, Berks.
 1956 DUPONT, A. ; 25 Ermitage, Wavre, Belgium.
 1927 DUYZEND, P. ; Koppeldijk 24, Huize, "Casarca," Zeist, Holland.
 1956 DYSTER, MELVIN B., M.D. ; 3231 Porter Road, Niagara Falls, New York, U.S.A.
- 1936 EAVES, W. L., F.Z.S. ; 581 Warwick Road, Solihull, Birmingham.
 1954 EGAN, E. ; 16 Tewkesbury Avenue, Droylsden, Nr. Manchester.
 1955 ELLIS, C. W. ; Corsham Court, Corsham, Wilts.
 1935 ENGELBACH, Dr. PIERRE ; 10 Rue Copernic, Paris (16^e), France.
 1955 ESSON, Mrs. M. D. ; 3 Western Avenue, Gidea Park, Romford, Essex.
 1950 EVANS, F. J., F.Z.S. ; 51 Brunswick Road, Leyton, E. 10.
 1929 EVANS, Miss JOAN ; Townsend, Middle Wallop, Hants.
 1950 EVANS, R. E., M.B., Ch.B. ; (Present Address Unknown.)
 1955 EVERITT, Sqd.-Ldr. C. ; 5 Brooklyn Grove, South Norwood, S.E. 25.
 1955 EVERITT, Mrs. C. M. ; 5 Brooklyn Grove, South Norwood, S.E. 25.
 1956 EZRA, Miss RUTH M. ; Chestnut Lodge, Old Common, Cobham, Surrey.

- 1956 FAIR, G. S. ; 23 Woodlands Terrace, Bothwell, Scotland.
- 1955 FAIRBARN, ANDREW ; The Round Hill, South Benfleet, Essex.
- 1953 FAIRIE, G. W. ; 76 Stirling Road, Tullibody, Clackmannanshire, Scotland.
- 1949 FANCUTT, FRANK, F.Z.S. ; 86 Linden Drive, Alvaston, Derby.
- 1956 FARNWORTH, P. F. ; Pora Pora, Whakatane, New Zealand.
- 1946 FAUDELL, C. L. ; 45 Dickason Road, Heathmont, Ringwood, Victoria, Australia.
- 1951 FIELD, Mrs. B. ; Whitebrook, Widbrook Common, Cookham, Berks.
- 1956 FIELDING, J. ; 66 Howard Avenue, Bexley, Kent.
- 1950 FIERLAFIJN, J. ; Karel Oomstraat 24, Antwerp, Belgium.
- 1953 FINCH, Col. H. B., M.C. ; "Revesby," Hutton Road, Ash Vale, Nr. Aldershot, Surrey.
- 1954 FINDLAY, Major J., D.S.O., F.R.Z.S. ; "Cosie Brae," West Cults, Aberdeenshire.
- 1952 FIORAVANTI, The Marquis ; Bellosguardo 14, Florence, Italy.
- 1956 FLETCHER, A. W. E. ; 136 Chester Road, Helsby, Cheshire.
- 1954 FLETCHER, S. ; 4 Loverseed Vale, Union Road, Nottingham.
- 1956 FLINTOFT, Mrs. J. W. ; Box 727, Issaquah, Washington, U.S.A.
- 1956 FLYNN, J. J. ; 12 Wellwood Street, Lenah Valley, Hobart, Tasmania, Australia.
- 1948 FOGG, H. ; 190 Station Road, Wylde Green, Sutton Coldfield, Nr. Birmingham.
- 1925 FOOKS, F. E. ; Clères, Seine Inférieure, France.
- 1932 FOOKS, H. A. ; Grizedale Lodge, Hawkshead, By Ambleside, Westmorland.
- 1951 FORD, J. ; 186 Woolwich Church Street, Woolwich, S.E. 18.
- 1953 FOSTER, P. ; 72 Stockport Road, Cheadle Heath, Stockport.
- 1951 FOTHERGILL, Miss S. A., F.Z.S. ; 8 Whitelands House, Sloane Square, London, S.W. 3.
- 1953 FRAMPTON, P. ; 53 Brunker Road, Broadmeadow, N.S.W., Australia.
- 1954 FRANKS, D. C. ; Argyll, 75 Old Road, Harlow, Essex.
- 1933 FRAYNE, RALPH ; 50 Cantley Lane, Bessacarr, Doncaster.
- 1956 FREW, J. H. ; 91 Canal Street, Saltcoats, Ayrshire.
- 1950 FROST, R. ; The Gravels, 61 Station Road, Brimington, Chesterfield.
- 1908 FROST, WILFRED J. C. ; c/o Zoological Society of London, Regent's Park, London, N.W. 1.
- 1947 FROSTICK, W. B., M.B.O.U. ; 26 Minster Precincts, Peterborough, Northants.
- 1929 FURNER, A. C. ; Oakdene, 115 Whitaker Road, Derby.
- 1950 GADD, J. A. ; 75 Holly Road, Aldershot, Hants.
- 1948 GALLAND, JOHN F. ; 197 Fraser Street, Howick, Pietermaritzburg, Natal, South Africa.
- 1956 GANNER, Miss E. G. ; 149 Holland Park Avenue, London, W. 11.
- 1953 GARDENER, L. F. ; 10 New Way, Pinelands, Cape Town, S. Africa.
- 1956 GARDINER, H. ; Great Wasketts, Gardiners Lane, Crays Hill, Billericay, Essex.
- 1941 GARDNER, A. H. ; 21 Kingsland Road, Strathfield, Sydney, N.S.W., Australia.
- 1956 GARNER, J. F. ; The Cabin, Far Street, Bradmore, Nottingham.
- 1951 GARNER, R. ; 1 Arno Vale Gardens, Woodthorpe, Nottingham.
- 1951 GARRATT, J. C. ; "Crossways," Sea Avenue, Rustington, Sussex.
- 1949 GARY, F. L. ; Earlham, Columbus, New Jersey, U.S.A.
- 1950 GASK, Miss D., F.Z.S. ; "Twa Noon," Lincoln Road, Chalfont-St.-Peter, Bucks.

- 1956 GATES, Rev. ROBERT H. ; 370 Commercial Road, London, E. 1.
 1956 GAVED, P. H. ; 1 Linden Cottages, High Street, Yatton, Nr. Bristol.
 1956 GEARY, R. ; School Cottage, Anslow, Burton-on-Trent, Staffs.
 1948 GEERTSEMA, Lt.-Colonel C. C. ; Soestdijk Palace, Baarn, Holland.
 1950 GEMMILL, JOHN ; Aikenhead, Kilmarnock, Ayrshire.
 1956 GENT, Mrs. O. S. ; 88 High Street, Berkhamsted, Herts.
 1948 *GERARD, Lord, F.Z.S., M.B.O.U. ; Blakesware, Ware, Herts.
 1956 GERRITS, H. A. ; 667 Rijkstraateg, Wassenaar, Holland.
 1953 GILBERT, R. N. ; 324 Hampton Avenue, Salt Lake City 4, Utah, U.S.A.
 1950 GILBERT, W. O., F.Z.S. ; 31 Douglas Road, Luton, Beds.
 1950 GILBERT, Mrs. W. O., F.Z.S. ; 31 Douglas Road, Luton, Beds.
 1948 GILL, J. M. ; Kahfax, Station Approach, South Ruislip, Middx.
 1953 GILLAN, A. ; 66 Broomhill Road, Aberdeen, Scotland.
 1946 GILLEN, JOHN ; Ballycraigy, Ballymena, Co. Antrim, N. Ireland.
 1955 GILLMOR, R. A. F. ; 58 Northcourt Avenue, Reading, Berks.
 1955 GILMOUR, E. F., A.M.A., M.S.B.E. ; Director, Doncaster Museum and Art Gallery, Waterdale, Doncaster.
 1956 GINN, JAMES F. ; 451 Metropolitan Pl. S.E., Atlanta 16, Georgia, U.S.A.
 1953 GJESSING, G. A. ; "Woodberry Hill," Konnerud, Drammen, Norway.
 1956 GLASS, W. G. ; 25 Olympia Hill, Morpeth, Northumberland.
 1956 *GLEADOW, Dr. E. F. ; The Mill House, Farningham, Kent.
 1928 GLENISTER, A. G., C.B.E., F.Z.S., M.B.O.U. ; The Barn House, East Blatchington, Seaford, Sussex.
 1931 GLOVER, P. H., F.Z.S. ; Isa Lei, 2 Round Hill Road, Livermead, Torquay, Devon.
 1953 GLOVER, P. J. ; Ridge Estate, P.O. Box 12, Ruiru, Kenya Colony, East Africa.
 1950 GODWIN, J. H. ; "Cherry Dell," Alderton Drive, Ashridge Park, Berkhamsted, Herts.
 1950 GOETZ, L. DALE ; 3116 N. Ernst Street, Franklin Park, Illinois, U.S.A.
 1950 GOMM, F. A. ; The Cave, Amersham Road, Hazlemere, High Wycombe, Bucks.
 1953 GOOD, Mrs. E. H. ; Buckland Fields, Lymington, Hants.
 1945 GOODWIN, DEREK, M.B.O.U. ; c/o Bird Room, British Museum (Natural History), Cromwell Road, S.W. 7.
 1956 GOOLD, S. E. ; P.O. Box, 49, Devonport, Tasmania, Australia.
 1945 GORDON, Mrs. BEATRICE HOOD CLAESON, F.Z.S. ; Cluny Castle, Monymusk, Aberdeen.
 1951 GORDON, W. H., Jr. ; 4412 West Sixteenth Street, Lubbock, Texas, U.S.A.
 1956 GORDON, W. O. ; 160 Wantirna Road, Ringwood, Victoria, Australia.
 1954 GRAHAM, G. ; 56 Market Square, Duns, Berwickshire.
 1956 GRAHAM, ROBERT C. ; June Road, Stamford, Conn., U.S.A.
 1935 GRANT, FRANK ; Parklands, Stoughton Lane, Evington, Leicester.
 1953 GRANTHAM, R. H. ; 13 St. Wilfrids Road, New Barnet, Herts.
 1956 GRASSBY, J., F.R.H.S. ; "The Glen," Mobberley, Nr. Knutsford, Cheshire.
 1956 GRAVEM, NICHOLAS, Jr. ; 200 Elm Avenue, Mill Valley, Calif., U.S.A.
 1951 GRAY, J., A.R.I.B.A. ; "Braemar," Dryburn Road, Durham Moor, Durham.
 1956 GREEN, Mrs. W. H. ; 8389 Redwood Avenue, Fontana, Calif., U.S.A.
 1956 GREENHALGH, J. H. ; "Broadlands," Springbrook Lane, Earlswood, Warwicks.
 1956 GREENSHIELDS, A. E. ; 50 Blight Street, Croydon, S. Australia.

- 1954 GREENWAY, K. W. ; "High Bank," Heath Road, Bladon, Oxford.
 1952 GREGORY, J. J. ; 66 Carew Road, Hamden, Conn., U.S.A.
 1954 GRELLIER, Mrs. R. ; Swindon Hall Farm, Swindon Village, Cheltenham.
 1954 GREWCOCK, K. R. E. ; 36 Station Road, Marston Green, Nr. Birmingham.
 1952 GRICE, H. ; Mount Pleasant, Hanging Grimston, Kirby Underdale, York.
 1953 GRIFFITHS, A. V., F.Z.S., M.R.C.V.S. ; Bryn Awel, Llandyssul, Cards.
 1946 GRIFFITHS, WILLIAM ; 19 Ethelbert Road, Wimbledon, London, S.W. 20.
 1956 GRIMSHAW, H. G. ; The Ram Inn, The Rushes, Loughborough, Leicester.
 1947 *GRISWOLD, JOHN A. ; The Zoological Society of Philadelphia, 34th Street
 and Girard Avenue, Philadelphia 4, Pa., U.S.A.
 1956 GRISWOLD, Professor OLIVER ; 4273 Ingraham Highway, Miami 33,
 Florida, U.S.A.
 1956 GROEN, Dr. H. D. ; Rijksweg 252, Haren Gr., Holland.
 1957 GROOM, CHARLES W. Jr. ; 34 Samuel Street, Peakhurst, Sydney, N.S.W.
 Australia.
 1951 GROUND, W. J. ; "Albion House," 61 Pinchbeck Road, Spalding, Lincs.
 1917 GROVES, Hon. Mrs. McGAREL ; Battramsley House, Lymington, Hants.
 1951 GRUBER, H. F., F.R.Z.S. (Scot.) ; 9 Churchill, Morningside, Edinburgh 10,
 1951 GUDMUNDSSON, Dr. F., M.B.O.U. ; Museum of Natural History, P.O. Box
 532, Reykjavik, Iceland.
 1947 GULLIVER, V. S. ; 33 Vale Road, Aylesbury, Bucks.
 1927 GURNEY, Miss DIANA ; North Runcion Hall, King's Lynn.
 1956 GUTHRIE, JAMES K. ; 3150, Valencia Avenue, San Bernardino, Calif.,
 U.S.A.
 1942 GUY, CHARLES P. ; Lamorna Bird Farm, Combe-in-Teignhead, Newton
 Abbot, S. Devon.
- 1939 HADDEN, NORMAN G. ; Underway, West Porlock, Somerset.
 1956 HADDOW, A. M. ; 23 Riverview Street, South Perth, Western Australia.
 1952 HADLOW, L. A. ; Barbary Farm, Norton, Faversham, Kent.
 1952 HADZIMA, J. ; 2059 Sweetwater Avenue, Spring Valley, California, U.S.A.
 1956 HAFIDH, ABDULILAH, Governor of the Central Bank, Baghdad, Iraq.
 1956 HAGAN, Miss MARY ; Lismara, Whiteabbey, Belfast, N. Ireland.
 1951 HAITH, J. E. ; Park Street, Cleethorpes, Lincs.
 1948 HALE, O. ; Laithfield, Digswell, Welwyn, Herts.
 1955 HALL, D. B. ; 3 Rowdeford Cottages, St. Edith's Marsh, Bromham, Wilts.
 1955 HALL, W. C. ; Arden House, 8 Randolph Road, London, W. 9.
 1956 HALL-SMITH, Mrs. E. D. ; Deacons Hay, Chelwood Gate, Nr. Haywards
 Heath, Sussex.
 1937 HALVERSON, A. W. ; 5705 West Erie Street, Chicago 44, Ill., U.S.A.
 1926 HAMPE, ALEX ; 13a Grub am Forst bei Coburg, Bavaria, Germany.
 1946 HANSEN, PAUL ; Gormsgade 3, I. Sal, Odense, Denmark.
 1949 HANSEN, ROBERT J. ; P.O. Box 46, Gonzales, Calif., U.S.A.
 1952 HANSEN, SVEND T. ; Ny Skelgaardsvej 21, Kastrup, Amager, Denmark.
 1948 HARDY, G. C., Jr. ; 61 East 18th Avenue, New Westminster, B.C.,
 Canada.
 1956 HARGRAVE, KEITH ; 28 Branson Avenue, Enfield Extension, Clearview,
 South Australia.
 1954 HARGREAVES, J. E. ; 256 Upper Batley Lane, Batley, Yorks.
 1949 HARMAN, H. J. ; 10 Haydon Road, Dagenham, Essex.
 1954 *HARMON, T. D. ; 3601 W.-102 Street, Inglewood 2, Calif., U.S.A.

- 1954 HARRAP, K. S. ; 2 Colchester Avenue, Sedgley Park, Prestwich. Nr. Manchester, Lancs.
- 1950 *HARRIS, A. J., Jr. ; Rte. 1—Box 24, Pendleton, Virginia, U.S.A.
- 1951 HARRIS, Mrs. E. ; 11 Prince Albert Street, Dudley, Worcs.
- 1956 HARRIS, J. E. ; Wood Lawn, Uttoxeter, Staffs.
- 1955 HARRIS, J. W. ; "Roysden," Mayfield, Sussex.
- 1956 HARRISON, D. J. ; No. 2. R.D., Minden, Tauranga, New Zealand.
- 1956 HARRISON, JAMES ; Carleton Hill, Penrith, Cumberland.
- 1956 HARRISON, J. F. ; Front Street, Haswell Moor, Haswell, Co. Durham.
- 1956 HARRISON, J. G., M.A., M.B., M.R.C.S., M.B.O.U. ; "Merriewood," St. Botolph's Road, Sevenoaks, Kent.
- 1955 HARTMANN, H. ; Ragnesminde, Glostrup, Denmark.
- 1956 HARTSHORNE, JAMES M. ; The Laboratory of Ornithology, Cornell University, Ithaca, New York, U.S.A.
- 1945 HARVEY, ARTHUR W. H. ; Rydal, Long Rock, Penzance, Cornwall.
- 1955 HARWOOD, P. ; Glebe Road, Darlington, Western Australia.
- 1957 HASLER, G. E. ; 221 Reservoir Road, Selly Oak, Birmingham 29.
- 1930 HASTINGS, P. H. ; 182 Sultan Road, Landport, Portsmouth.
- 1952 HAWKE, E. H. ; Box 796, Lourenco Marques, Portuguese East Africa.
- 1956 HAWKINS, Mrs. B. ; Hall Farm, Shareshill, Nr. Wolverhampton, Staffs.
- 1956 HAWKINS, ROLAND W. ; Conservatory-Aviary, West Park, Pittsburgh 12, Pa., U.S.A.
- 1953 *HAWLEY, W. M. ; 703-15th Avenue, New Westminster, B.C., Canada.
- 1956 HAWORTH, C. T. ; Old Falinge, Rochdale, Lancs.
- 1946 HAYWARD, Mrs. D. A. ; Invermay, Highland Avenue, Brentwood, Essex.
- 1956 HEAD, R. J. ; Main Road, Hackleton, Northants.
- 1950 HEARD, A. C. ; The Cedars, Baschurch, Shrewsbury.
- 1947 HEATH, R. E., B.A., M.B.O.U. ; 2 Pembroke Court, Edwardes Square, London, W. 8.
- 1955 HEDIGER, Professor Dr. H. ; Zoologischer Garten, Zurich, Switzerland.
- 1952 HEMPSTED, H. J. ; 2 New Houses, Bacton Road, North Walsham, Norfolk.
- 1955 HENDERSON, M. S. ; Heather Cottage, Potten End, Berkhamsted, Herts.
- 1952 *HENDERSON, W. B. ; Viewfield House, Bankfoot, Perthshire.
- 1945 HENRY, B. R., M.B., B.Ch., D.P.H., J.P. ; Four Winds, Comber, Belfast, N. Ireland.
- 1956 HENRY, The Rev. B. C. R. ; 17 Station Road, Westgate-on-Sea, Kent.
- 1952 HENRY, G. M. ; "Ainsgarth," Fore Street, Constantine, Falmouth.
- 1955 HESLOP, H. J. ; Witton Lodge, Simonstone, Nr. Burnley.
- 1956 HESSEY, M. ; Keepers' Lodge, Zoological Society of London, Regent's Park, N.W. 1.
- 1956 HIGGINSON, A. H. ; Stinsford House, Dorchester, Dorset.
- 1939 HILL, W. C. OSMAN, M.D., Ch.B., F.L.S., F.Z.S. ; Lancaster House, Prince Albert Road, London, N.W. 8.
- 1945 HINDLE, E., M.A., Sc.D., Ph.D., F.R.S., F.L.S., F.Z.S. ; The Athenaeum, Pall Mall, London, S.W. 1.
- 1926 HIRST, ROBERT S., F.Z.S. ; Swincliffe House, Gomersal, Nr. Leeds.
- 1954 HOBDAY, Miss S. I. ; 149 Holland Park Avenue, London, W. 11.
- 1953 HOBSON, Mrs. D. A. ; Warren Cottage, Totland Bay, Isle of Wight.
- 1947 HODGES, J. R., Ph.D., F.Z.S. ; 23 Ashridge Gardens, Pinner, Middlesex.
- 1956 HODGSON, FRANK J. ; 30 Hobart Avenue, East Lindfield, Sydney, N.S.W., Australia.
- 1955 *HOFFMANN, L. ; Tour du Valat, par Le Sambuc, B.D.Rh., France.
- 1956 HOLBERRY, F. H. ; 29 Alvan Street, Higher Openshaw, Manchester 11.

- 1956 HOLLAND, H. ; Stamford Park (Joint) Committee, Stalybridge, Cheshire.
 1922 HOLLAS, Mrs. K. E., F.Z.S. ; Hothersall Hall, Ribchester, Nr. Preston, Lancs.
 1930 *HOLLOND, Miss GLADYS M. B. ; Great Ashfield House, Bury St. Edmunds, Suffolk.
 1951 HOLM, BJÖRN ; Kyrkogatan 5, Kiruna, Sweden.
 1954 HOOPER, S. F. ; 35 Frederick Terrace, Wisbech, Cambs.
 1956 HOOPER, W. G. ; 62 Aldermans Hill, Palmers Green, N. 13.
 1951 **HOPKINSON, Miss E. M. ; "Wynstay," Balcombe, Nr. Haywards Heath, Sussex.
 1928 HORNE, DOUGLAS PERCY ; Lloyds, Leadenhall Street, London, E.C. 3.
 1956 HORSHAM, RONALD J. E., F.Z.S., M.I.A. ; Box 3456 Cape Town, South Africa.
 1954 HOSKINS, N. ; The Cottage, Park Road East, Uxbridge, Middx.
 1934 HOUSDEN, Major E. F., M.C., T.D., M.A., F.Z.S. ; 126 Bessborough Road, Harrow.
 1948 HOUSDEN, EDWIN J. T. ; 29 Putney Hill, London, S.W. 15.
 1933 HOUSDEN, Dr. LESLIE, O.B.E. ; 29 Putney Hill, London, S.W. 15.
 1942 HOVELL, S. ; 29 Woad Lane, Long Sutton, Spalding, Lincs.
 1956 HOWELL, J. Z. ; Aberdeen and Pembroke Roads, Saint Davids, Pennsylvania, U.S.A.
 1952 HUDDART, B. J., F.Z.S., M.B.O.U. ; Shirley House, Marsh Lane, Taplow, Bucks.
 1956 HUEBNER, H. B. ; Route 4, Box 420, Niles, Michigan, U.S.A.
 1955 HUGHES, G. ; "Ramblers," Amos Lane, Wednesfield, Wolverhampton.
 1956 HUGHES, H. B. ; 9 Wessex Avenue, Bristol 7.
 1950 HUGHES, N. D. ; 1 High Street, Hampton Hill, Middx.
 1956 HUGHES, P. ; Furneaux Pelham Hall, Buntingford, Herts.
 1956 HUGHES, Mrs. ROSE ; 928 Teetshorn Street, Houston 9, Texas, U.S.A.
 1953 HUNT, W. G. ; 26 Middle Street, Brixham, Devon.
 1939 HURLBURT, Dr. W. E. ; Vineland, Ontario, Canada.
 1930 HUTCHINSON, G. ROWLAND ; 736 Remuera Road, Auckland, New Zealand.
 1956 HUTCHINSON, J. R. ; 29 Croftlands, Warton, Nr. Carnforth, Lancs.
 1947 HUYTON, A. E. ; 55 Victoria Road, Great Crosby, Liverpool 23.
 1956 HYDE, D. O. ; Yamsay Ranch, Chiloquin, Oregon, U.S.A.
 1956 HYNDMAN, IAN V. ; 353 Lower Heidelberg Road, East Ivanhoe N. 21., Melbourne, Victoria, Australia.
 1940 ILES, GERALD T., F.Z.S. ; Zoological Gardens, Belle Vue, Manchester 12.
 1939 INDGE, H. J., F.Z.S. ; Trimstone, Thorpe, Surrey.
 1953 INGLIS, J. F., F.R.Z.S. (Scot.) ; Alford Private Hotel, Alford, Aberdeenshire.
 1954 INGRAM, Mrs. P. ; 46^c Edwardes Square, London, W. 8.
 1948 IRVING, G. J. ; 2 Grove Road, Egremont, Cumberland.
 1953 IRVING, N. S. ; Eardswick, Newcastle Road, Gorsty Hill, Nr. Crewe, Cheshire.
 1952 *ISAKSON, Dr. E. W. ; 168 West 12th Street, Ogden, Utah, U.S.A.
 1926 ISENBERG, A. H. ; 451 Portola Road, Woodside, California, U.S.A.
 1955 JACK, ANTHONY ; Avenida da Liberdade 192, Lisbon, Portugal.
 1951 JACOBSON, OWE ; Kaprifolgatan 4, Malmö, Sweden.
 1953 JAKOBSSON, Miss D. A., F.Z.S. ; Summerlands Cottage, Ferndown, Wimborne, Dorset.
 1956 JANSSEN, P. J. C. G. ; Strijpsestraat 74, Eindhoven, Holland.

- 1953 JASAWALLA, C. M. ; "Hill Crest," 14 Salisbury Park, Poona, India.
 1947 *JASDAN, Y. S. SHIVRAJKHACHAR OF ; The Palace, Jasdan, (Saurashtra), India.
 1956 JEFFERY, J. ; Waterhayne, Yarcombe, Honiton, Devon.
 1956 JERSEY, The Earl of ; Radier, Longueville, Jersey, Channel Islands.
 1956 JEWELL, A. ; 54 Oxford Road, Burford, Oxfordshire.
 1952 JOHNSON, F. E. B. ; "Willow Close," Mill Lane, Hulcote, Bletchley, Bucks.
 1956 JOHNSTON, E. J. McC. ; 66a Pine Avenue, Leeton, N.S.W., Australia.
 1951 JOHNSTONE, S. T. ; The Wildfowl Trust, The New Grounds, Slimbridge, Glos.
 1956 Jolley, I. B. ; Olney, Bucks.
 1949 JONES, C. G. ; 8416 Midland Road, Bellevue, Washington, U.S.A.
 1956 JONES, D. G. ; 7 Cambrian Road, Richmond, Surrey.
 1933 JONES, F. TERRY, F.Z.S. ; Leckford Abbas, Stockbridge, Hants.
 1956 JONES, KEITH E. ; O'Connor Street, Nyahwest, Victoria, Australia.
 1953 JONES, Sgt. M. LEE, F.Z.S. ; Headquarters Detachment, 36th Medical Battalion (Sep), A.P.O. 165, Hanau-am-Main, Germany.
 1934 JONES, S. B. ; Five Oaks, 97 Liverpool Road, Lydiate, Lancs.
 1950 JONES, Major V. DILWYN, M.B.E., M.M., T.D. ; "Sherwood," Grosvenor Road, Llandrindod Wells, Radnor.
 1956 JORDAN, C. D. ; Manor House, Newton, Swansea.
 1956 JOSEPH, Miss S. R. ; 51 Tudor Close, Brixton Hill, London, S.W. 2.
- 1956 KADEL, Mrs. M. ; "Pamaroo," Roma, Queensland, Australia.
 1955 KAGAWA, MITAMI ; Ritsurin Park Zoo, Takamatsu City, Kagawa-Ken, Japan.
 1953 KELL, W. ; 1 Ash Terrace, Leasing Thorne, Bishop Auckland, Co. Durham.
 1951 KELLOGG, Mrs. F. M. ; 955 Park Avenue, New York 28, U.S.A.
 1956 KELTY, DONALD W. ; Box 307, Hamilton, Victoria, Australia.
 1953 KENDALL, S. B., M.R.C.V.S. ; Weir Cottage, Bridge Road, Chertsey, Surrey.
 1956 KENMARE, The Countess of ; Villa Fiorentina, St. Jean Cap Ferrat, Nice, A.M., France.
 1955 KENNEDY, D. ; Quitman, Georgia, U.S.A.
 1956 KENT, Mrs. I. ; 416 Long Acre, Nechells, Birmingham 7.
 1927 KERR, J. E. ; Harviestoun, Dollar, Scotland.
 1955 KILLICK, B. M. ; "Sandhome," Raunds, Wellingborough, Northants.
 1956 KING, F. H. ; 53 Westfields, Road, Corby, Northants.
 1938 KING, H. T. ; Flat B, 36 Magdala Road, Mapperley Park, Nottingham.
 1953 KINGSLAND, W. F. ; Hill-and-Dale, Redding, Connecticut, U.S.A.
 1956 KINGSTON, J. ; "Berwyn," Bilston Road, Willenhall, Staffs.
 1936 *KINSEY, ERIC C. ; P.O. Box 396, Fairfax, Marin County, Calif., U.S.A.
 1950 KIRK, KEITH C. ; 54 Station Road, Sutton-in-Ashfield, Notts.
 1953 KIRK, Dr. R. S. ; 3 Park Crescent, London, W. 1.
 1948 KIRKALDY, Mrs. M., F.Z.S. ; The Grove, Warley Mount, Brentwood, Essex.
 1952 KIRKHAM, R. G. ; "The Gables," Wynnsward Park, Clonskeagh, Co. Dublin, Eire.
 1952 KLAASEN-SÉE, Mrs. M. ; Papaverstraat 42, Bussum, Holland.
 1956 KLENK, ARTHUR J. ; 291 Canning Highway, Palmyra, Western Australia.
 1954 KLÖVEKORN, WERNER ; Pfalzdorferstrasse 61, (22A) Goch/Rhld, Western Germany.
 1928 KNOBEL-HARMAN, Miss M. H., F.Z.S. ; 19 Connaught Square, London, W.2.

- 1952 KNÖS, C. J. ; Fish and Wildlife, Kenai, Alaska, U.S.A.
 1954 KRAUS, F. ; Neuried 1, München 49, Germany.
 1955 KREUGER, R. ; Stockholmsgatan 17, Helsingfors, Finland.
 1954 KYME, R. T. ; 30 King Street, Kirton, Nr. Boston, Lincs.
- 1947 LABDON, B. ; Millberne, Cullompton, Devon.
 1929 LAIDLAY, J. C. ; Holmwood, Perth, Scotland.
 1951 LAKE, Dr. F. B. ; The White House, 5 Portsmouth Road, Kingston-on-Thames.
 1937 LAKE, GEORGE D., M.B.O.U. ; Audreys, Burghfield Common, Reading, Berks.
 1945 LAMB, A. ; Mount Pleasant, Hexham, Northumberland.
 1956 LAMPSON, Miss B. LOCKER ; Keepers Cottage, Copthorne, Sussex.
 1954 LANCASTER, M. C., Ph.D., B.Sc., M.R.C.V.S. ; 76 Westwood Road, Bemerton Heath, Salisbury, Wilts.
 1954 LANG, Dr. E. M. ; Zoologischer Garten, Basel, Switzerland.
 1950 LANGBERG, WALTHER ; Tudskaervej 22, Copenhagen, Vanløse, Denmark.
 1919 LAW, SATYA CHURN, M.A., Ph.D., F.Z.S., F.N.I., M.B.O.U. ; 50 Kailas Bose Street, Calcutta, India.
 1952 LAWRENCE, C. C. ; Normacot, Cressing, Braintree, Essex.
 1955 LAWRENCE, K. J., F.Z.S. ; Smallands Hall, Hatfield Peverel, Nr. Chelmsford, Essex.
 1930 LAX, J. M. S. ; Southfield, Crook, Co. Durham.
 1949 LAZZERONI, IVO ; 524 South Dancove Drive, West Covina, Calif., U.S.A.
 1956 LEADER, Mrs. M. ; Denston Hall, Newmarket, Suffolk.
 1956 LEARNARD, R. A. ; 1200 Ring Building, Washington 6, D.C., U.S.A.
 1956 LEATHERBARROW, R. ; 4 Oxford Street, Finedon, Wellingborough, Northants.
 1955 LEE, C. ; Harbour Cottage, Crabmarsh, Wisbech, Cambs.
 1956 LEE, EDWARD J. ; Mahony Street, Upwey, Victoria, Australia.
 1953 LEE, N. A. ; 8 Canada Crescent, Bispham, Blackpool.
 1956 LEISER, Dr. T. M. ; Berg en Dalseweg 84, Nijmegen, Holland.
 1956 LE MARQUAND, J. J. ; 75 Bath Street, Jersey, Channel Islands.
 1946 *LEMON, Miss E. K. ; c/o 1007 Government Street, Victoria, B.C., Canada.
 1947 LESLIE, JOHN ; 34 Amroth Avenue, Toronto 13, Ontario, Canada.
 1949 LEVER, H. ; 64 Union Street, Hyde, Cheshire.
 1955 LEWIS, Mrs. Eda ; P.O. Box, Tipton, Pa., U.S.A.
 1946 LEWIS, W. O. ; Milnsbridge, Bicton Heath, Shrewsbury.
 1955 LIEVENS, D. ; Kaaiweg 44, Moerzeke, by Dendermonde, Belgium.
 1952 LIMBERG, HANS ; Harscampstrasse 62, Bad Aachen, Germany.
 1951 LINDSAY, A. ; 422 Lake Street, Oak Park, Illinois, U.S.A.
 1956 LINDSAY, P. A. ; "Glendene," Surig Road, Canvey Island, Essex.
 1953 LINFIELD, W. F. ; Grans. Cottage, Thakeham, Nr. Storrington, Sussex.
 1951 LIPPENS, COMTE LÉON ; Den Hul, 43 Boslaan, Knocke-Le Zoute, Belgium.
 1941 LIVERMORE, JOHN W. ; The Old Stone House, P.O. Box 41, West Redding, Conn., U.S.A.
 1952 LOAR, J. A. ; 8 Coleridge Road, Wyken, Coventry.
 1956 LONGHURST, Mrs. A. R. ; Landford Cottage, Landford, Nr. Salisbury, Wilts.
 1956 LONGNEY, C. W. ; Oxford Chambers, St. Stephen's Street, Bristol 1.
 1954 LONSDALE, Mrs. E. M. ; Grove House, Stapleford Abbots, Romford, Essex.
 1951 LOUWMAN, P. ; Dierenpark Wassenaar, Rijkssstraatweg 667, Wassenaar, Holland.

- 1927 LOWE, Rev. J. R., M.A. ; The Vicarage, Coln St. Aldwyns, Cirencester, Glos.
- 1951 LUCAS, V. J. ; Park House, West Rasen, Market Rasen, Lincs.
- 1955 LUKE, J. A. ; Bona Lodge, Aldourie, Inverness.
- 1947 LUMSDEN, Lt.-Col. WILLIAM V. ; Sluie, Banchory, Aberdeenshire, Scotland.
- 1956 LUPTON, H. ; 21 Deneside Mount, Bankfoot, Bradford 5, Yorks.
- 1952 LUTHER, H. M. ; 26 Park Crescent, Portland Place, Regent's Park, W. 1.
- 1956 LUTTMER, J. ; Esher Park Avenue, Esher, Surrey.
- 1947 LYNCH, G., F.Z.S. ; 21 Sunnycroft Road, Hounslow, Middx.
- 1954 LYNE, C. E. M. ; Dunfield House, Fairford, Glos.
-
- 1948 MACK, H. G. ; 11 Elora Street, Guelph, Ontario, Canada.
- 1954 MACLEOD, N. ; White Lodge, Strathpeffer, Scotland.
- 1953 MACPHIE, D. J. ; Hazel Cottage, Petersham, Surrey.
- 1953 MACRAE, Miss H. I. ; 15 Forbes Road, Edinburgh 10, Scotland.
- 1947 MAITLAND, Miss M. C. ; North Lodge, Goring-by-Sea, Sussex.
- 1956 MAKIN, C. ; "Ashbourne," Craven Road, Rainhill, Nr. Liverpool.
- 1954 MANKEL, W. ; Bahnhofstrasse 44, Dörnigheim-am-Main, Germany.
- 1954 MANTLE, P. ; 14 Parker Road, Ely, Cardiff.
- 1954 MARLER, C. J. S. ; Pheasants Nest, Weston Underwood, Olney, Bucks.
- 1950 MARSHALL, J. C. ; 25 Stevens Road, Sandiacre, Notts.
- 1930 MARTIN, A. ; 26 Somerford Road, Reddish, Stockport.
- 1951 MASON, H., M.C., F.Z.S. ; 2 Dunstan Road, London, N.W. 11.
- 1952 MASON, L. M. ; Talbot Manor, Fincham, King's Lynn, Norfolk.
- 1956 MATTHEWS, F. A. ; 66 Tindale Road, Artarmon, N.S.W., Australia.
- 1956 MAXWELL, E. A. ; "Warrambien," Cove, Dumbartonshire.
- 1929 MAXWELL, P. H., F.Z.S., M.B.O.U. ; c/o Zoological Society of London, Whipsnade Park, Nr. Dunstable, Beds.
- 1913 *MAXWELL-JACKSON, Miss M., F.Z.S. ; Percy House, Scotton, Knaresborough, Yorks.
- 1922 *MAYER, F. W. SHAW, C.M.Z.S. ; c/o Mr. R. W. Tebb, Lae, New Guinea, via Australia.
- 1955 MEES, G. F. ; Rijksmuseum van Natuurlijke Historie, Leiden, Holland.
- 1935 MERCK, Dr. WOLFGANG ; Rupert Strasse 55, Hamburg-Nieusteden, Germany.
- 1950 MERRY, C. ; 89 King William Street, Tunstall, Stoke-on-Trent.
- 1956 MEYERS, DUDLEY C. ; Messrs Sinclair Murray and Co., Ltd., 6 Royal Exchange Place, Calcutta, India.
- 1951 MIDDLETON, G. ; 50 Carter Street, Uttoxeter, Staffs.
- 1953 MIDDLETON, L. G. ; The Old Vicarage, Church Town, Nr. Garstang, Lancs.
- 1951 MIDWINTER, J. ; 62 Oxford Road, Burford, Oxford.
- 1953 MIGHELL, E. R. ; 106 Selborne Road, Southgate, N. 14.
- 1956 MILFORD, B. F. ; 2 Fairway Avenue, Boreham Wood, Herts.
- 1951 MILLER, H. E. ; "Westwater," Tedburn St. Mary, Nr. Exeter, Devon.
- 1950 MILLER, R. C. ; Standard Bank of South Africa, Ltd., Pietermaritzburg, Natal, S. Africa.
- 1937 MILLIGAN, H. ; Upper Manor Farm, Leckford, Stockbridge, Hants.
- 1951 MILLIGAN, I. B. ; 5 Silsey Avenue, Sale, Cheshire.
- 1954 MILLINGTON, J. J. ; Barn Close, Bushby, Leicestershire.
- 1956 MILNE, L. THORNTON, M.A.(Agric.) Cantab ; Lower Coombe Farm, East Allington, Nr. Totnes, S. Devon.
- 1951 MILNE, R. S. ; 18 Silverwell Street, Bolton, Lancs.

- 1929 MILNES-COATES, Sir CLIVE, Bart., O.B.E., F.Z.S. ; 13 Hyde Park Gate, London, S.W. 7.
- 1937 MILTON, Capt. STANLEY F. ; 75 Portland Avenue, Gravesend, Kent.
- 1952 MITCHELL, Mrs. F. G. ; Clapton Manor, Kettering, Northants.
- 1943 MITCHELL, HAROLD A. ; 2 Stuart Street, East Kilbride, Lanarkshire.
- 1956 MITCHELL, J. ; 33 Chapman Street, Wakari, Dunedin, New Zealand.
- 1952 MITCHELL, R. E. ; 49 Woodlands Avenue, Church End, Finchley, N. 3.
- 1950 MITCHELL-FOX, Mrs. E. M. ; Tresawle, Wheatridge Lane, Livermead, Torquay, Devon.
- 1956 MIYAKE, MASAMI ; P.O. Box 11, Kakogawa-shi, Hyogo-ken, Japan.
- 1926 MOODY, A. F. ; Lilford, Oundle, Peterborough.
- 1949 MOODY, H. ; 91 Barbara Avenue, Uppingham Road, Leicester.
- 1950 MOORE, J. T. ; 17 Gold Street, Wellingborough, Northants.
- 1928 MOORE, ROBERT T. ; The Moore Zoological Laboratory, Box 388, Occidental College, Los Angeles 41, California, U.S.A.
- 1955 MORELL, Mrs. G. ; 29 Linden Gardens, London, W. 2.
- 1954 MORGAN, Mrs. A. ; 38 Inham Road, Chilwell, Notts.
- 1949 MORNY, C. J. ; 52 Draycott Place, London, S.W. 3.
- 1931 MORRISON, A. R. G., F.Z.S., M.B.O.U. ; c/o Chartered Bank of India, Australia and China, Kuching, Sarawak.
- 1956 MORTON, Rev. NEVILLE ; 38 Tempest Avenue, Darfield, Nr. Barnsley, Yorks.
- 1947 MOSFORD, FRANK ; The Elms, Churton Heath, Saughton, Nr. Chester.
- 1956 MOSHEIM, E. ; 7 Gardiner Road, Hawthorn, Victoria, Australia.
- 1927 MOTT, B. ; Grey Mill Farm, Wootton Wawen, Nr. Henley-in-Arden.
- 1929 MOTTERSHEAD, G. S., F.Z.S. ; Zoological Gardens, Chester.
- 1923 MOUNTAIN, Capt. WALTON ; Groombridge Place, Groombridge, Kent.
- 1956 MUIRHEAD, D. W. ; 23 Somerleyton Street, Unthank Road, Norwich, Norfolk.
- 1956 MULCAHY ; 21 Roberts Road, Haddenham, Nr. Aylesbury, Bucks.
- 1956 MULLER, E. ; 25 Merriman Avenue, Stellenbosch, Cape, S. Africa.
- 1956 MURPHY, Rev. Father MAX E. ; The Presbytery, Chaguanas, Trinidad, B.W.I.
- 1952 MURRAY, G. T. ; 4235 Ohio Street, Gary, Indiana, U.S.A.
- 1947 MURRAY, H. ; Bracken, Cornsland, Brentwood, Essex.
- 1952 MURRAY, J. B. ; c/o Messrs. Bovril, Ltd., 123 Chaussée de Mons, Brussels, Belgium.
- 1939 MURRAY, R. J. ; 12 High Road, Camberwell, E. 6, Victoria, Australia.
- 1949 MURRAY, SAMUEL, F.Z.S. ; 18 Somerset Gardens, Lewisham, S.E. 13.
- 1956 MCCREERY, G. H. ; "Roydon," Hazel Croft, Carr Lane, Shipley, Yorks.
- 1926 *McCULLAGH, Sir CRAWFORD, Bart. ; Lismara, Whiteabbey, Belfast, N. Ireland.
- 1956 McDONALD, GLENN ; Box 1385, Gastonia, N.C., U.S.A.
- 1950 McGOWAN, H. ; 13 Robertson Way, Ash, Aldershot, Hants.
- 1956 McGRATH, J. J. ; Brownstown House, Curragh, Co. Kildare, Eire.
- 1953 McHALE, J. P. ; 1526 W. Highland Avenue, Chicago 26, Ill., U.S.A.
- 1954 McKEE, Mrs. K. M. ; 2603 Maple Crescent, Rossland, B.C., Canada.
- 1950 McKENZIE, D. L. ; The New Inn, Winchelsea, Sussex.
- 1955 McLACHLAN, G. R. ; Museum and Snake Park, 28 Bird Street, Port Elizabeth, S. Africa.
- 1955 McLAUGHLIN, T. J. ; The Bungalow, Gordon Ave., Foxrock, Co. Dublin, Eire.

- 1955 McLEAN, A., B.Sc., M.R.C.V.S., D.V.H. ; Bellevue Zoological Gardens, Belfast, N. Ireland.
- 1956 McMEEKIN, ROBERT W. ; Tates Creek Road, Lexington, Ky. ; U.S.A.
- 1952 NEWELL, J. P., Ph.C., M.P.S.I., D.Opt., M.I.O.S. ; 4 Pearse Street, Athlone, Eire.
- 1930 NEWILL, D. S., M.D. ; Box 634, Connellsville, Pa., U.S.A.
- 1953 NEWLAND, R. A. ; 93 Arne Avenue, Parkstone, Poole, Dorset.
- 1956 NEWMARK, G. H. ; Staff, H.M. Prison, Johore Bahru, Malaya.
- 1931 NICHOLSON, N. ; Edenvale, 16 Weardale Place, Stockton-on-Tees.
- 1955 NICOLAI, Dr. J. ; Max Planck-Institut, Buldern üb. Dülmen/Westf., Germany.
- 1947 NICOULLAUD, J. G. ; 48 rue Descartes, Chinon, France.
- 1954 NIXON, T. F. E. ; "Honeystones," Leverington, Wisbech, Cambs.
- 1947 NOBLE, R. A. W. ; Little Grange, Canterbury Road, Margate, Kent.
- 1948 NOORDZIJ, J. H. ; Burg. Visserpark 13, Alphen a. d. Rijn, Holland.
- 1949 NOREEN, GEORGE W. ; 22008-9th Avenue, Bothell 3, Washington, U.S.A.
- 1939 NORRIS, KENNETH A., F.Z.S., M.B.O.U. ; Elmstone, 45 Highfield Road, Purley, Surrey.
- 1953 OAKES, J. H. ; 93 Robinet Road, Beeston, Nottingham.
- 1956 OAKIE, WALTER V. ; Ransom Road, Winston-Salem, North Carolina, U.S.A.
- 1956 O'CONNELL, W. C. ; 2128 Dixie Highway, Fort Mitchell, Kentucky, U.S.A.
- 1955 OLIVER, C. ; 135 Mill Lane, Denton, Nr. Manchester.
- 1950 OLIVIER, GEORGES, F.Z.S., M.B.O.U. ; 6 rue Ch.-Flavigny, Elbeuf (Seine Inférieure), France.
- 1955 OLLEY, C. A. ; 163 Avon Road, Chelmsford, Essex.
- 1945 OLSON, LEO B. ; 835 South First Street, De Kalb, Illinois, U.S.A.
- 1952 OLSSON, C. J. ; Erik Dahlbergsgatan 19, Gothenborg, Sweden.
- 1955 O'NEILL, JORGE ; Largo do Conde Barão 5, Lisbon, Portugal.
- 1956 ORFORD, T. J. ; 14 Dean Street, Caringbah, N.S.W., Australia.
- 1956 ORLANDO, Dr. VITTORIO ; Via Roma 401, Palermo, Italy.
- 1954 ORSATTI, P. ; 97 Beaver Avenue, Toronto, Ontario, Canada.
- 1928 OSTREHAN, CLEMENT ; Kington Rectory, Worcester.
- 1947 OVEREND, Miss EUNICE ; 49 Alexandra Road, Frome, Somerset.
- 1953 OVERLÄNDER, D. ; Austrasse 17, Bad Honnef/Rhein, Germany.
- 1953 OZANNE, H. W. H. ; Istamboul Lodge, La Ramée, St. Peter Port, Guernsey, C.I.
- 1956 PACKER, DUDLEY W. ; Main Road, Paradise, South Australia.
- 1956 PAGE, Mrs. B. V. ; "Greenanore," Tewin Wood, Welwyn, Herts.
- 1956 PAGE, W. J. ; EDITOR *Cage Birds*, Dorset House, Stamford Street, London, S.E. 1.
- 1956 PALLETT, L. E. ; "Peter Pan," 8 Twynham Road, Maidenhead Berks.
- 1944 PALMELLA, The Duke of, F.Z.S. ; 116 Rua Escola Polytechnica, Lisbon, Portugal.
- 1955 PALSSON, W. F. ; Halldorsstadir, Laxardal, via Husavik, Iceland.
- 1950 PANTING, PETER J., B.Sc. ; "Belle Vue," Main Street, Goodwick, Pems.
- 1957 PAPÉ, T. V. F. ; "Hollington," Kimbolton Road, Bedford.
- 1954 PARIS, P. G. ; Boskenna, St. Buryan, Cornwall.
- 1956 PARKES, Dr. K. C. ; Carnegie Museum, Pittsburgh 13, Pennsylvania, U.S.A.
- 1950 PARREN, R. J. ; Avenue House, Tenmpon Road, King's Lynn, Norfolk.

- 1956 PARSONS, E. RUSSELL ; "Swanwic House," Swanage, Dorset.
- 1952 PARTRIDGE, P. B. ; 164 Waverley Avenue, Twickenham, Middx.
- 1934 PARTRIDGE, W. R., F.Z.S. ; The Bungalow, Lower Haseler, Nr. Evesham, Worcs.
- 1952 PATTEN, R. A., B.V.Sc. ; "Dunromin," Windsor Road, Kellyville, N.S.W., Australia.
- 1949 PAYN, Major W. H., M.B.E., M.B.O.U. ; Hartest Place, Bury St. Edmunds, Suffolk.
- 1950 PAYNE, C. M. ; The Malt House, Barford, Warwick.
- 1955 PAYNE, Mrs. C. M. ; The Malt House, Barford, Warwick.
- 1951 PEARSON, J. C., A.R.S.G.B. ; Southern Kinta Consolidated Ltd., Southern Kampar Section, Tanjong Tualang, Perak, Malaya.
- 1946 PEARSON, RAYMOND ; 179 West Auckland Road, Darlington, Co. Durham.
- 1940 PEAT, RODERICK M., F.Z.S. ; 11 Ironmonger Lane, London, E.C. 2.
- 1956 PELCH, WILLIAM E. ; 5016 West 25th Place, Cicero 50, Ill., U.S.A.
- 1953 PERRY, J. A. W. ; 14 New Way, Pinelands, Nr. Cape Town, S. Africa.
- 1956 PETERS, Mrs. MARGARET F. ; Plashett Park Farm, Ringmer, Nr. Lewes, Sussex.
- 1956 PETTER, E. R. ; 9 Short Street, Harden, N.S.W., Australia.
- 1954 PHILLIPS, Miss R. F. ; 488 Shirley Road, Hall Green, Birmingham, 28.
- 1935 PHIPPS, Mrs. L. N., F.Z.S., M.B.O.U. ; The Manor House, Minster Lovell, Oxon.
- 1956 PIERCE, ROLAND L. ; R.F.D. 5, Princeton, Ill., U.S.A.
- 1955 PIGG, N. ; 3427 McCormick Avenue, Hollywood, Ill., U.S.A.
- 1954 PILCHER, R. E. M., M.A., F.R.C.S. ; The Meadows, 39 Spilsby Road, Boston, Lincs.
- 1956 PILLING, C. A. ; 1612 N. 90th Street, Seattle 3, Washington, U.S.A.
- 1934 PITT, W. S. ; Wildwood, Silverdale Avenue, Walton-on-Thames, Surrey.
- 1924 PLATH, K. ; 114 S. East Avenue, Oak Park, Ill., U.S.A.
- 1956 PLUMB, T. R. ; The Cayley Arms, Rhos-on-Sea, Colwyn Bay, N. Wales.
- 1947 PODMORE, C. R. ; 49 Greystones Grange Road, Ecclesall, Sheffield 11.
- 1949 POHLE, Prof. HORST C. ; Teachers' Training College (P.T.P.G.), Tondano, North Celebes, Indonesia.
- 1937 POLAK, Dr. A. C. ; Spoorstraat 15, Amersfoort, Holland.
- 1925 POLTIMORE, Lady ; Benwell, P.O. Box 6, Bindura, Southern Rhodesia.
- 1956 POND, G. W. ; 50 Malherbe Street, Capital Park, Pretoria, Transvaal, South Africa.
- 1955 PONTING, A. G. ; North Owersby, Lincoln.
- 1956 POPE, P. A. ; 13 Torrington Road, Ashford, Kent.
- 1956 PORTER, G. J. C. ; 62 New Park Avenue, Palmers Green, N. 13.
- 1920 PORTER, SYDNEY, F.Z.S., M.B.O.U. ; The White Gates, 149 Stenson Road, Derby.
- 1914 POTTER, BERNARD E., M.B., M.R.C.S., L.R.C.P., F.Z.S. ; 39 Devonshire Place, London, W. 1.
- 1956 POTTER, J. ; Linden, Chase Ridings, Enfield, Middx.
- 1956 POTTER, Mrs. J. ; Linden, Chase Ridings, Enfield, Middx.
- 1956 POWE, Mrs. M. ; Pythingdean, Pulborough, Sussex.
- 1956 POWER, P. C. ; The Tan House, Lapworth, Warwicks.
- 1956 POWERS, JAMES F. ; 736 Martin Blvd., San Leandro, Calif., U.S.A.
- 1956 PRATT, L. ; 8 Barremma Road, Lakemba, N.S.W., Australia.
- 1928 *PRESTWICH, ARTHUR A. ; 61 Chase Road, Oakwood, N. 14.
- 1951 PRIEST, Dr. A. A. ; 434-6 Acheson Building, 2131 University Avenue, Berkeley 4, Calif., U.S.A.

- 1954 PRIP, F. ; Adolphsvvej 39, Gentofte, Denmark.
 1956 PRITCHARD, J. P. ; Bordertown, South Australia.
 1956 PURDY, R. F. W. ; 51 Prince George's Avenue, Raynes Park, London, S.W. 20.
 1953 PYE, Brigadier RANDALL, D.S.O. ; Avenings Farm, Danehill, Sussex.
- 1948 QUENBY, H. F. ; "Standard" House, High Street, Baldock, Herts.
 1913 QUINCEY, R. S. DE Q., F.Z.S. ; The Vern, Bodenham, Hereford.
- 1948 RABBIN, HILBERT J., I.S.O., F.Z.S. ; 33 Kingsway, Wembley.
 1956 RADEMACHER, PERRIN G. ; 1700 Manchester Road, Wheaton, Ill., U.S.A.
 1954 RAEVEN, Dr. M. A. ; Houwclingenplantsoen 8, Vught, 's Hertogenbosch, Holland.
 1949 RAGAN, CALVIN ; P.O. Box 7, Bell, California, U.S.A.
 1956 RAMSDEN, J. ; "Millbrook," Benton Park, Harrogate Road, Rawdon, Nr. Leeds.
 1954 RANDAU, G. ; Avenida Rui Barbosa 500, Recife, Pernambuco, Brazil.
 1943 RANKIN, Lieut.-Col. N., F.R.G.S., F.R.P.S. ; House of Treshnish, Calgary, Isle of Mull, Argyll, Scotland.
 1950 RATH, JOSEPH ; Maria Lutzst. 9, Pfaffenhofen-Jlm (Oberbayern), Germany.
 1939 RAVEN, WILLIAM H., O.B.E. ; Meadow Cottage, Church Walk. Wellesbourne, Nr. Warwick.
 1948 RAY, Mrs. V. E. ; Hulwating Tea Estate, Amhuri P.O., Assam, India.
 1950 RAYMAEKERS, L. ; 71 Avenue Molière, Brussels, Belgium.
 1947 REAY, J. H. ; Cranmore, The Close, Hillingdon, Middx.
 1956 REBELLO, STEPHEN ; 1448 Grand Army Highway, Somers, Massachusetts, U.S.A.
 1955 REDMAN, D. S., F.Z.S. ; Bleak Hall, Biggleswade, Beds.
 1954 REED, Miss A. ; Apt. 10, Queen's Court, 581 Jarvis Street, Toronto, Ontario, Canada.
 1956 REED, R. C. ; 11 Montah Avenue, Killara, N.S.W., Australia.
 1950 REES, F. A. D. ; Leckford, Stockbridge, Hants.
 1956 REEVE, J. M. ; Ash Lea, New Station Road, Bolsover, Nr. Chesterfield.
 1956 REID, G. ; "Grassington," Rotherham, North Canterbury, New Zealand.
 1939 REID, Miss MARION C. ; c/o Messrs. John Reid, Ltd., Walt Street, Newcastle, N.S.W., Australia.
 1951 REID-HENRY, D. M. ; 43 West View Drive, Woodford Green, Essex.
 1951 RENDELL, R. G. ; 60 Guinions Road, High Wycombe, Bucks.
 1946 RICARDO, Mrs. MARY C. ; Audreys, Burghfield Common, Reading, Berks.
 1950 RICH, JOSEPH W. ; 1073 West 11th Street, San Pedro, Calif., U.S.A.
 1949 RICHARDSON, JAMES ; Spencer House, 101 Stockton Lane, York.
 1955 RICHARDSON, J. ; 106 Bransty Road, Whitehaven, Cumberland.
 1953 RIDLEY, C. T. ; Birdwarren Farm, Varsity View P.O., Box 217, Charleswood, Manitoba, Canada.
 1954 RIGGE, J. S. ; Old Broadgate, Millom, Cumberland.
 1948 RIIS-HANSEN, KAI ; Nørre Alle 75, Glostrup, Denmark.
 1956 RILEY, E. ; Outgate, Birkwray, Nr. Ambleside, Westmorland.
 1937 *RIPLEY, S. DILLON, Ph.D., M.B.O.U. ; Kilravock, Litchfield, Conn., U.S.A.
 1935 RISDON, D. H. S. ; The Dudley Zoological Society, Dudley, Worcs.
 1956 RITCHIE, D. ; 66 Boronia Road, Boronia, Victoria, Australia.

- 1943 ROBERTSON, Dr. A. R. ; P.O. Box 95, Kroonstad, O.F.S., South Africa.
 1947 ROBINSON, B. E. ; Field House, Blackborough Road, Reigate, Surrey.
 1951 ROBINSON, G. E. ; 487 Little Horton Lane, Bradford.
 1953 ROBINSON, H. A. ; 903 Arcadia Avenue, Arcadia, Calif., U.S.A.
 1956 ROBINSON, Mrs. J. E., F.Z.S. ; Flat 1, 63 Nightingale Lane, Balham, S.W. 12.
 1927 ROBISON, A. W. ; 125 Maiden Lane, San Francisco 8, Calif., U.S.A.
 1952 RODGERS, J. ; 39 Fore Street, Totnes, Devon.
 1956 ROGER, A. S. ; 16 Walton Street, London, S.W. 3.
 1956 ROHRIG, S. H. ; 12 Fisk Avenue, Glengowrie, South Australia.
 1955 ROKOSKY, EMIL J. ; Racine Zoological Park, 2131 North Main Street, Racine, Wis., U.S.A.
 1951 ROLPH, W. ; Undley Lodge, Lakenheath, Suffolk.
 1945 ROONEY, JAMES P., M.B.O.U. ; 1514 South 12th Avenue, Yakima, Washington, U.S.A.
 1946 ROOTE, CYRIL C. ; 116 Cardinal's Walk, Scaptoft Lane, Leicester.
 1954 ROSE, W. H. ; 44 Sapcote Road, Hinckley, Leics.
 1956 ROSSEEL-NEYRINCK, V. ; Iseghemstraat 287, Rumbeke, Belgium.
 1954 ROSSITER, Dr. N. A. ; Colonial Mutual Bldg., West Street, Durban, Natal, S. Africa.
 1953 ROTERS, J. ; Elk Lumber Co., Box 170, Temiskaming, Quebec, Canada.
 1956 ROTHERWICK, Lord ; Sedgwick Park, Horsham, Sussex.
 1954 ROTHWELL, Dr. K. G. ; 51 Lutterworth Road, Leicester.
 1954 ROUILLARD, J. V. ; P.O. Box 72, Stanger, Natal, S. Africa.
 1956 ROUSE, O. ; "Mirasol," Frithwood Lane, Billericay, Essex.
 1951 ROYDEN, T. W. E. ; Broad House, Fleggburgh, Norfolk.
 1952 RUDKIN, F. H., Jr. ; 3rd and Fillmore Streets, Fillmore, California, U.S.A.
 1950 RUSSELL, BARNABAS, F.R.S.A., F.Z.S., F.R.H.S. ; 20 Bucklersbury, Hitchin, Herts.
 1956 RUSSELL, K. ; "Rafso Cottage," Outwell, Nr. Wisbech, Cambs.
 1954 RUTGERS, A. ; Boeckenrode, Joppe, Holland.
 1927 RYCROFT, Mrs. V. ; 8 The Mead, Cirencester, Glos.
 1954 SALMON, W. G. ; Angley Lake, Cranbrook, Kent.
 1956 SALTER, Miss G. ; "The Flat," Primley House, Paignton, Devon.
 1951 SALTERI, D., F.Z.S. ; 44 Montrose Terrace, Edinburgh 7.
 1955 SANDERSON, S., 33 Cardinal Avenue, Boreham Wood, Herts.
 1953 SANDS, W. M., F.Z.S. ; Silver Birches, Farrar Lane, Adel, Leeds 16.
 1956 SANKEY, P. H. ; Tamworth House Restaurant, Hunstanton, Norfolk.
 1945 SAUNDERS, RONALD, F.Z.S. ; Regent Parade, Sycamore Road, Amersham, Bucks.
 1956 SAVORY, Major R. G. H., F.I.A.I., F.R.E.S. ; 138 Hatch Road, Pilgrims Hatch, Brentwood, Essex.
 1950 SAWDEN, M. ; "The Gardens," Uddens, Nr. Wimborne, Dorset.
 1949 *SAWYER, R. C. J., F.Z.S. ; 226 Haggerston Road, London, E. 8.
 1954 SCAMELL, K. M., O.B.E. ; Woodbury Cottage, Broad Lane, Newdigate, Surrey.
 1953 SCAMELL, Mrs. K. M. ; Woodbury Cottage, Broad Lane, Newdigate, Surrey.
 1956 SCHLESSELMAN, Dr. EDMOND A., M.D. ; 450 Blackstone Avenue, Fresno, Calif., U.S.A.
 1949 SCHNEIDER, P. E. ; 5113 No. Acacia Street, San Gabriel, Calif., U.S.A.
 1955 SCHOMBERG, G. ST. GEORGE ; 64 Addison Road, London, W. 14.

- 1951 SCHUMACHER, Mrs. H. L. ; 7027 Sycamore Avenue, Seattle 7, Washington, U.S.A.
- 1954 SCHUSTER, Dr. H. ; 3 rue Maurice Barrès, Saint-Avold, Moselle, France.
- 1914 SCHUYL, D. G. ; Kralingscheweg 332, Rotterdam O, Holland.
- 1934 SCOTT, A. H., F.Z.S. ; Abbotswell, Frogham, Fordingbridge, Hants.
- 1938 *SCOTT, PETER, C.B.E., D.S.C., M.A., F.Z.S., M.B.O.U. ; The New Grounds, Slimbridge, Gloucestershire.
- 1952 SCOTT, R. A. ; 1 Lambton Road, Broadmeadow, N.S.W., Australia.
- 1956 SCOTT, The Hon. Mrs. R. M. ; North Runcion Hall, King's Lynn, Norfolk.
- 1956 SCOTT, W. G. ; 1 Maranoa Crescent, Coburg, Melbourne, Victoria, Australia.
- 1928 SCOTT-HOPKINS, Capt. C., F.Z.S. ; Knoll House, Shiplake, Oxon.
- 1956 SCOURFIELD, J. G. ; 6 Oaklands Avenue, Dialstone Lane Stockport, Cheshire.
- 1955 SCRAGG, D. G., F.Z.S., F.R.H.S. ; 4 Drakefield Road, Liverpool 11.
- 1951 SEAGO, J., F.Z.S. ; Hall Common, Ludham, Norfolk.
- 1954 SEARLE, K. C., M.B., B.S., C.M.Z.S. ; Windsor House, Victoria, Hong Kong.
- 1951 SEARS, JOHN L. ; Reel Hall, Shamley Green, Guildford, Surrey.
- 1956 SECCULL, E. A. ; 6 Cromwell Road, Banbury, Oxon.
- 1956 SERJEANTSON, Major J. M. ; Yed Hill, Ringwood, Hants.
- 1953 SEWELL, W. A., F.R.Z.S. ; Pleasley Road, Skegby, Sutton-in-Ashfield, Notts.
- 1956 SEXTON, J. ; 49 Cross Roads, Maldon, Essex.
- 1951 SHAFFER, B. ; 3006 South West Temple, Salt Lake City, Utah, U.S.A.
- 1956 SHARP, J. ; Rosella, Orchard Road, Forres, Morayshire.
- 1954 SHARPE, W. G. ; 6 High Street, Flitwick, Bedford.
- 1932 SHEARING, A. P. ; Corner Cottage, Woodlands Park, Woodlands Lane, Stoke d'Abernon, Cobham, Surrey.
- 1949 *SHEFFLER, WILLIAM J. ; 4731 Angeles Vista Boulevard, Los Angeles 43, Calif., U.S.A.
- 1951 SHELLIM, Dr. M. A. ; c/o The Eastern Bank, Ltd., 2-3 Crosby Square, London, E.C. 3.
- 1956 SHEPPARD, J. L. ; 9 Gardeners Road, Bently East, Melbourne, Victoria, Australia.
- 1956 SHEPPERSON, L. ; The Chestnuts, March, Cambs.
- 1956 SHERREN, R. ; Kingsdale, Watford-by-Pass, Watford.
- 1953 SHOLAR, Dr. N. P., D.D.S. ; Box 265, Mooresville, N.C., U.S.A.
- 1953 SHONAMAN, W. ; 1890-21 Avenue, New Westminster, B.C., Canada.
- 1955 SHYNAL, J. ; 48 Holly Avenue, Hamilton, Ontario, Canada.
- 1946 SIBLEY, A. E., F.Z.S. ; 7 Alexandra Gardens, Hounslow, Middx.
- 1956 SIMMONS, K. ; 6 Kenpas Highway, Coventry, Warwicks.
- 1955 SIMMONS, K. E. L. ; Lamorna, Beechwood Ave., Tilehurst, Reading, Berks.
- 1956 SIMMONDS, S. C. ; 99 Court Lane, Dulwich, S.E. 21.
- 1956 SIMÕES, FRANCISCO ; Quinta das Terras, Pinheiro de Loures, Portugal.
- 1953 SIMÕES, J. F. ; L. do Conde Barão 5, Lisboa, Portugal.
- 1924 SIMPSON, H. W. ; 6 Barry Road, Stonebridge, Willesden, N.W. 10.
- 1947 SLADER, W. T., J.P. ; Pentillie, Honiton Road, Exeter.
- 1956 SLATER, C. ; 12 Moorland View, Gleadless, Sheffield 12.
- 1954 *SLOTTER, Mrs. C. F. ; Hopewell, New Jersey, U.S.A.
- 1954 SMART, T. E. ; Castlemead, Tenbury Wells, Worcs.
- 1956 SMITH, B. G. ; 17 Kingsclere Avenue, Corner Hawkley Green, Weston, Southampton.

- 1955 SMITH, CARLETON F. ; 625 Kenmore Drive, San Gabriel, Calif., U.S.A.
 1941 SMITH, E. WILFORD ; "Lynwood," 15 Kingsway Road, Leicester.
 1954 SMITH, F. ; 12 Nabs Head Lane, Samlesbury, Nr. Preston, Lancs.
 1956 SMITH, H. ; 42 Priory Road, St. Denys, Southampton.
 1947 SMITH, KENNETH J., F.Z.S. ; Paignton Zoological Gardens, Paignton, Devon.
 1955 SMITH, R. G. ; 247 Gladstone Avenue, Wood Green, London, N. 22.
 1952 SMITH, STANLEY ; 79 Anson Road, Singapore 2, Malaya.
 1917 SMITH, W. PROCTER, F.Z.S. ; Bexton House, Knutsford, Cheshire.
 1953 SNAZLE, H. A., M.B.E., F.Z.S. ; Chessington Zoo, Ltd., Leatherhead Road, Chessington, Surrey.
 1956 SNYDER, DON ; 315 Linden Walk, Lexington, Kentucky, U.S.A.
 1946 SOANES, ARTHUR C. ; The Fishery Inn, Elstree, Herts.
 1950 SOAR, E. R. ; 233 Long Lane, Hillingdon, Middx.
 1952 SPEED, Mrs. D. A. ; 925 Clinton Avenue, Fresno, California, U.S.A.
 1951 SPEEL, C. ; Saxenburgerweg 9, Bloemendaal, Holland.
 1954 SPENCE, J. M. ; c/o P.E. Museum and Snake Park, 28 Bird Street, Port Elizabeth, S. Africa.
 1952 SPENCE, T., M.R.C.V.S. ; Dunbog, Newburgh, Fife, Scotland.
 1956 SPERLING, E. ; 62 Wheatley Road, Welwyn Garden City, Herts.
 1953 SPILSBURY, D. T. ; "Hill View," 12 Upper Howsell Road, Malvern Link, Worcs.
 1923 SPURWAY, N. B. ; "The Hermitage," Oadby, Leicestershire.
 1939 SQUIRE, E. O. ; Bassmead, St. Neots, Hunts.
 1954 STAPLES, H. A. ; 461 East Sacramento Avenue, Chico, Calif., U.S.A.
 1956 STANFORTH, B. G. ; 10 Lyme Road, Ampthill, Beds.
 1956 STEEL, NEWTON R., N.D.A. ; The Hookland Estate, Scaynes Hill, Haywards Heath, Sussex.
 1954 *STEPHAN, H. C. ; "Hathersage," Gordons Road, Somerset West, C.P., S. Africa.
 1953 STEVENS, A. ; 56 Gwencole Crescent, Braunstone, Leicester.
 1932 STEVENS, RONALD ; Walcot Hall, Lydbury North, Shropshire.
 1956 STEYN, B. ; c/o Steyns Foundry Pty, Ltd., 242 Edison Road, Pretoria, S. Africa.
 1953 STIVEN, H. ; c/o Shell Co. of W.A., Ltd., P.H.B. 2052, Lagos, Nigeria.
 1956 STOBART, J. D. W. ; Bevern Bridge House, Chailey, Sussex.
 1952 STODDART, R. W. ; Grey Lynn, Flatts Lane, Normanby, Nr. Middlesbrough, Yorks.
 1922 STOKES, Capt. H. S., M.C., F.Z.S. ; Longdon, Rugeley, Staffordshire.
 1953 STONE, M. B., Jr. ; Martin's Pond Road, Groton, Mass., U.S.A.
 1929 STONEY, Miss I. ; Central Lodge, 55 Central Hill, Upper Norwood, London, S.E. 19.
 1928 STORMONTH-DARLING, P. ; 7 Egerton Court, Harrington Road, London, S.W. 7.
 1955 STRACHAN, Mrs. B. G. ; The Garden Cottage, Thornsflush, Cranleigh, Surrey.
 1951 STRAIGHT, WHITNEY, C.B.E., M.C., D.F.C., F.Z.S. ; The Aviary, Windmill Lane, Southall, Middx.
 1948 STRANGE, FRANK E. ; P.O. Box 207, Redondo Beach, California, U.S.A.
 1956 STRANN, MELVILLE M. ; 8729 Shoshone Avenue, Northridge, Calif., U.S.A.
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 1955 STROLLO, J. J. ; Box 577, Hq. Far East Air Forces, A.P.O. 925, San Francisco, Calif., U.S.A.
 1930 STROMBI, Miss DORA A. ; Eastbank House, Brechin, Angus.

- 1956 STROUD, Mrs. F. ; 105 Priory Road, Hastings, Sussex.
 1949 STRUTT, Hon. PETER A. ; Bentley Park, Ipswich, Suffolk.
 1950 STURGIS, A. F. ; 740 Sansom Street, Philadelphia 6, Pa., U.S.A.
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 1952 SUNDSTRÖM, Miss BRITT-MARIE ; Östra Larmgatan 3, Göthenburg, Sweden.
 1938 SUTTON, PETER, M.R.C.V.S. ; 11 Culverden Park Road, Tunbridge Wells.
 1955 SUTTON, Mrs. P., M.R.C.V.S. ; 11 Culverden Park Road, Tunbridge Wells.
 1951 SVANE, C. H. ; Frederikssundsvej 168, Brønshøj, Copenhagen, Denmark.
 1902**SWAN, J. A., F.Z.S. ; Hazel Mere, Rectory Lane, Sidcup, Kent.
 1950 SWAN, Mrs. J. A. ; Hazel Mere, Rectory Lane, Sidcup, Kent.
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- 1950 TONG, E. H. ; Zoological Society of London, Whipsnade Park, Nr. Dunstable, Beds.
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 1956 WEBSTER, J. H. ; Ashgrove, Knockholt Pound, Kent.
 1950 WEINMAN, Major A. N., O.B.E., C.M.Z.S. ; The Zoological Gardens of Ceylon, Allan Avenue, Dehiwela, Colombo, Ceylon.
 1942 WENKE, FRANCIS L. ; P.O. Box 581, Ferndale, Washington, U.S.A.
 1947 WEST, DAVID ; 209 N. 18th Street, Montebello, California, U.S.A.
 1956 WESTON, C. D. ; Bradgate House, Groby, Leicestershire.
 1956 WESTON, J. T. Y. ; 4 Lynmouth Road, Leicester.

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- 1947 WHEELER, T. E., F.Z.S. ; Lynwood, Onslow Avenue, Cheam, Surrey.
- 1947 WHEELER, Mrs. T. E., F.Z.S. ; Lynwood, Onslow Avenue, Cheam, Surrey.
- 1956 WHITE, F. ; 52 Berry Brow, Clayton Bridge, Manchester 10.
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- 1955 *WHITE, Dr. LAWRENCE F. ; 1345 North Vermont Avenue, Los Angeles 27, Calif., U.S.A.
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- 1924 WILDEBOER, Dr. H. ; "Tuanna," 244 Saltshouse Road, Sutton, Nr. Hull, Yorks.
- 1950 WILKINS, E. E. ; 52 Shenstone Road, Hollywood, Nr. Birmingham.
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- 1953 WINDECKER, Dr. W. ; Zoologischer Garten, Riehler Strasse 173, Köln-Riehl, Germany.
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- 1951 WITTING, Mrs. R. C. ; The Gables, West Horsley, Surrey.
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- 1956 WOODHOUSE, S. ; 184 Jameson Avenue, Salisbury, Southern Rhodesia.

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Rules of the Avicultural Society

Last amended, 9th November, 1955.

1.—The name of the Society shall be THE AVICULTURAL SOCIETY, and its object shall be the study of British and foreign birds in freedom and in captivity. Poultry, Pigeons, and Canaries shall be outside the scope of the Society. The year of the Society, with that of each volume of the Society's Magazine, which shall be known as the AVICULTURAL MAGAZINE, shall commence with the month of January and end on the 31st December following.

2.—The Avicultural Society shall consist of Ordinary, Life, Honorary Life Members, and Honorary Fellows, and the last shall be restricted in number to ten, and be elected by the Council.

3.—The Officers of the Society shall be elected, annually if necessary, by Members of the Council in the manner hereinafter provided, and shall consist of a President, one or more Vice-Presidents, a Secretary-Treasurer, an Assistant Secretary, an Editor, and a Council of fifteen Members. The President, Vice-Presidents, Secretary-Treasurer, Assistant Secretary, and Editor shall be *ex officio* Members of the Council.

4.—New Members shall be proposed in writing, and the name and address of every person thus proposed, with the name of the Member proposing him shall be published in the next issue of the Magazine. Unless the candidate shall within two weeks after the publication of his name in the Magazine, be objected to by at least two Members, he shall be deemed to be duly elected. If five Members shall lodge with the Secretary objections to any candidate he shall not be elected, but the signatures to the signed objections must be verified by the Scrutineer. If two or more Members shall object to any candidate the name of such candidate shall be brought before the Council at their next meeting, and the Council shall have power to elect or to disqualify him from election.

5.—Each Member shall pay an annual subscription of £1, to be due and payable in advance on the 1st of January in each year; and, on payment of the subscription shall be entitled to receive all the numbers of the Society's Magazine for the current year. Life Member's fee, £15.

6.—Members intending to resign their membership at the end of the current year of the Society are expected to give notice to the Secretary before the 1st of December, so that their names may not be included in the "List of Members", which shall be published annually in the January number of the Magazine.

7.—The Magazine of the Society shall be issued on or about the first day of every month, and forwarded, post free, *to all the Members who shall have paid their subscriptions for the year ; but no Magazine shall be sent or delivered to any Member until the annual subscription shall have reached the hands of the Secretary-Treasurer.* Members whose subscriptions shall not have been paid as above by the first day in November in any year shall cease to be Members of the Society, but may be readmitted, at the discretion of the Council, on payment of the annual subscription.

8.—The President, Secretary-Treasurer, Assistant Secretary, and Editor shall be elected for a term of five years, and, should a vacancy occur, it may be temporarily filled by the Executive Committee (see Rule 10). At the expiration of the term of five years in every case it shall be competent for the Council to nominate the same officer, or another Member, for a further term of five years, unless a second candidate be proposed by not less than twenty-five Members of at least two years' standing, as set forth below.

In the November number of the Magazine preceding the retirement from office of the President, Secretary-Treasurer, Assistant Secretary, and Editor, the Council shall publish the names of those members whom they have nominated to fill the vacancies thus created ; and these Members shall be deemed duly elected unless another candidate or candidates be proposed by not less than fifteen Members of at least two years' standing. Such proposal, duly seconded and containing the written consent of the nominee to serve, if elected, in the capacity for which he is proposed, must reach the Secretary on or before the 15th of November.

9.—The Members of the Council shall retire by rotation, three at the end of each year of the Society (unless a vacancy or vacancies shall occur otherwise) and three other Members of the Society shall be recommended by the Council to take the place of those retiring. The names of the three Members recommended shall be printed in the November number of the AVICULTURAL MAGAZINE. Should the Council's selection be objected to by fifteen or more Members, these shall have power to put forward three other candidates, whose names, together with the signatures of not less than fifteen Members proposing them, must reach the Secretary *by the 15th of November.* The names of the six candidates will then be printed on a voting paper and sent to each Member with the December number of the Magazine, and the result of the voting published in the January issue. Should no alternative candidates be put forward, in the manner and by the date above specified, the three candidates recommended by the Council shall be deemed to have been duly elected. In the event of an equality of votes the President shall have a casting vote.

If any Member of the Council does not attend a meeting for two years in succession the Council shall have power to elect another Member in his place.

10.—Immediately after the election of the Council that body shall proceed to elect three from its Members. These three, together with the Secretary-Treasurer, Assistant Secretary, and Editor, shall form a Committee known as the Executive Committee.

The duties of the Executive Committee shall be as follows :—

(i) In the event of the resignation of any of the Officers during the Society's year, to fill temporarily the vacancy until the end of the year. In the case of the office being one which is held for more than one year (e.g. Secretary-Treasurer, Assistant Secretary, or Editor) the appointment shall be confirmed by the Council at its next meeting.

(ii) To act for the Council in the decision of any other matter that may arise in connection with the business of the Society.

The decision of any matter by the Executive to be settled by a simple majority (three to form a quorum). In the event of a tie on any question, such question shall be forthwith submitted by letter to the Council for their decision.

The Executive shall not have power

- (i) To add to or alter the Rules ;
- (ii) To expel any Member ;
- (iii) To re-elect the Secretary-Treasurer, Assistant Secretary, or Editor for a second term of office.

It shall not be lawful for the Treasurer to pay any account exceeding £10 unless such account be duly sanctioned by another Member of the Executive.

It shall be lawful for the Secretary-Treasurer or Editor to pledge the Society's credit for a sum not exceeding £100.

Should a Member wish any matter to be brought before the Council direct such matter should be sent to the Secretary with a letter stating that it is to be brought before the Council at their next meeting, otherwise communications will in the first place be brought before the Executive.

A decision of a majority of the Council, or a majority of the Executive endorsed by the Council, shall be final and conclusive in all matters.

11.—The Editor shall have an absolute discretion as to what matter shall be published in the Magazine (subject to the control of the Executive Committee). The Secretary and Editor shall respectively refer all matters of doubt and difficulty to the Executive Committee.

12.—The Council (but not a committee of the Council) shall have power to alter and add to the Rules, from time to time, in any manner they may think fit. Five to form a quorum at any meeting of the Council.

13.—The Council shall have power to expel any Member from the Society at any time without assigning any reason.

The Society's Medal

(*Instituted 1st November, 1896*)

RULES

The Medal may be awarded at the discretion of the Council to any Member who shall succeed in breeding, in the United Kingdom, any species of bird which shall not, in the opinion of the Council, be known to have been previously bred in captivity in Great Britain or Northern Ireland. Any Member wishing to obtain the Medal must send a detailed account for publication in the Magazine within about eight weeks from the date of hatching of the young, and furnish such evidence of the facts as the Council may require. The Medal will be awarded only in cases where the young shall live to be old enough to feed themselves, and to be wholly independent of their parents. The question of awarding a Medal for the breeding of local races or sub-species of species that have already been bred shall be at the discretion of the Council. No Medal can be given for the breeding of hybrids.

The account of the breeding must be reasonably full so as to afford instruction to our Members, and must appear in the AVICULTURAL MAGAZINE before it is published or notified elsewhere. It should describe the plumage of the young, and *be of value as a permanent record of the nesting and general habits of the species*. These points will have great weight when the question of awarding the Medal is under consideration.

In every case the decision of the Council shall be final.

The Medal will be forwarded to each Member as soon after it shall have been awarded as possible.

The Medal is struck in bronze (but the Council reserve the right to issue it in *silver* in very special cases) and measures $2\frac{1}{2}$ inches in diameter. It bears on the obverse a representation of two birds with a nest containing eggs, and the words "The Avicultural Society—founded 1894". On the reverse is the following inscription: "Awarded to [*name of recipient*] for rearing the young of [*name of species*], a species not previously bred in captivity in the United Kingdom."

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